

## **Voltastar and Freedom Fone: The use of radio and Interactive Voice Response to reach farmers with agricultural information**

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### **Intro:**

Radio holds great potential as a distance education medium in the developing world because it is widely accessible. Unlike print resources, information delivered over the airwaves can reach anyone with a radio – whether male, female, literate or illiterate. Programs can also be aired in local languages. However, radio is typically a one-way flow of information, lacking in interactivity with the audience, meaning that listeners must be available at a specific time to listen to broadcasts in real-time and can only listen once. For this reason Farm Radio International launched an action research project, African Farm Radio Research Initiative (AFRRI) to determine how and in what ways modern ICTs could be used to make radio more effective and interactive media. This approach promises great potential, however very few studies have been conducted to demonstrate the effect of these ICTs on enhancing radio's interactivity directly. Among the few published materials the book published by Bruce Girard (2003) described the benefits of modern ICT to the domain of radio. In the same book Jean-Pierre Ilboudo and Riccardo del Castello lay out the principles which make community radio an engaging medium for listeners and communities but fail to go into depth about the specific technologies which can enhance these principles of engagement.

The Mobile phone is one of the ways farmers in developing countries are accessing relevant agricultural information. For example in India a project named Avaaj Otalo setup an Interactive Voice Forum to facilitate the exchange of agricultural information between farmers and agricultural experts through a series of voice mail messages (Neil Patel et.al.). A related project in Southern India by the Commonwealth of Learning also made use of the voicemail technology support the non-formal learning of illiterate and semi illiterate women who were learning how to raise goats for small scale business (Balasubramanian et.al, 2010). This project demonstrated that mobile phones and the use of voicemail is an appropriate and effective learning technology for rural populations, particularly women, in developing countries.

To extend the reach of the information found within the voicemail messages, which in the above studies was limited to a closed set of participants, radio can play a powerful role in helping this technology reach the masses. One emerging new technology providing similar service of Interactive Voice Response(IVR), is Freedom Fone. Freedom Fone is an open source IVR platform designed to help small organizations, including radio stations, make information accessible to citizens via the mobile phone (<http://www.Freedom Fone.org/page/overview>).

The use of IVRs to enhance the interactivity of radio is a relatively unexplored domain. For this reason, the AFRRI project researched, implemented and evaluated many different modern ICTs which could be used for this purpose – Freedom Fone being just one of many.

The objective of this study was to determine the ability of Freedom Fone to address the challenges of rural radio listeners to access broadcasts on demand (listening to repeats of programs) and to access relevant and timely market prices and information.

### **Methodology:**

The study was conducted in Ghana between January and March 2010. Initially two radio stations were selected from a group of 25 stations partnering with the AFRRI project: Voltastar Radio (Ghana, public radio) and Radio Maria (Tanzania, private). The two radio stations were selected based on their capacity to support Freedom Fone, a relatively advanced ICT which required amongst other things: stable electricity, local technical support staff and an interest from the radio

broadcasters and management. However, for the purpose of this paper and presentation, we will explore the experience and findings from the Ghana deployment of Freedom Fone only.

The equipment employed by the radio stations used for this study included: a desktop computer for hosting the Freedom Fone server software, a VoiceblueLite GSM gateway modem for linking incoming mobile phone calls to the server as well as a recording studio for recording and producing messages to be placed on the Freedom Fone system. To access the Freedom Fone service a caller only needed a basic mobile phone.

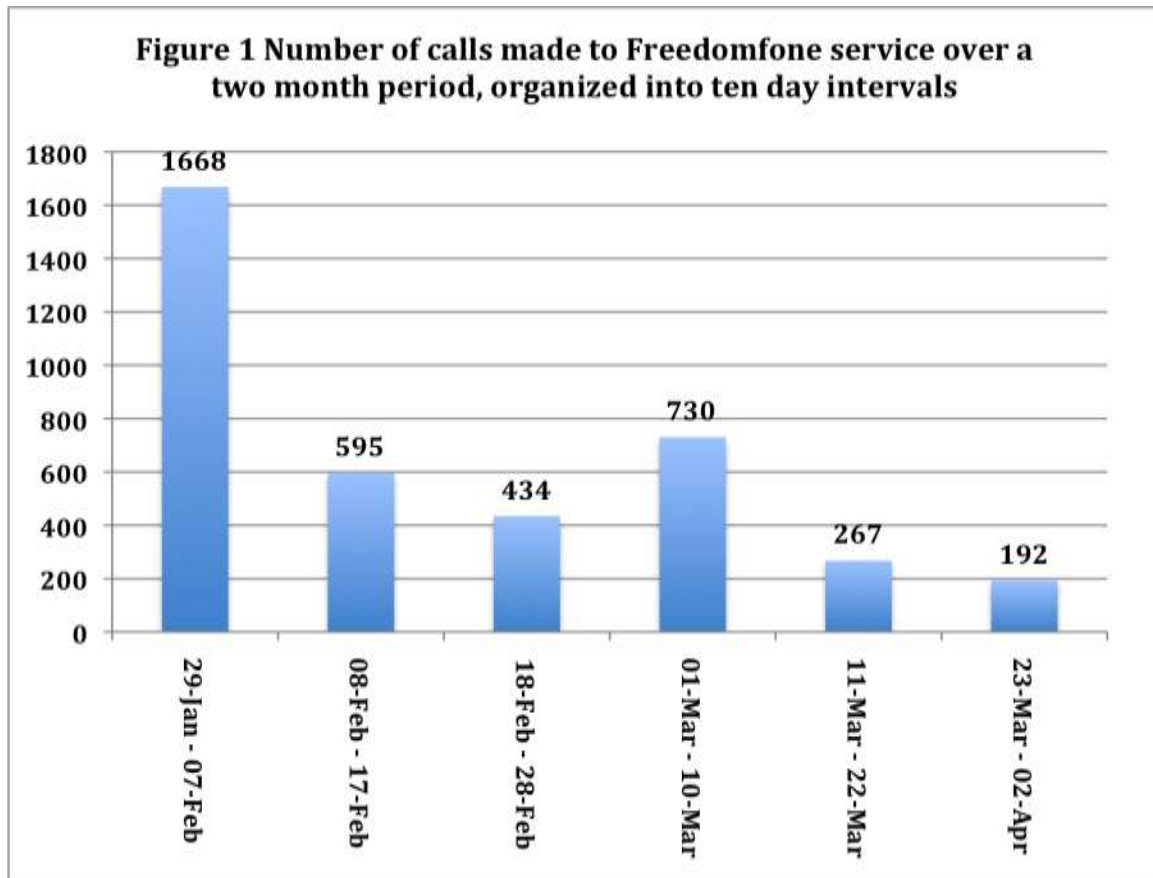
At Voltastar radio, the Freedom Fone was used in three major ways: First, to make the farm radio broadcasts, which promoted the use of mulching and minimum tillage on farmers land, to make the repeats of the broadcasts available as five minute summaries over a mobile phone call. Second, the service would provide callers with relevant and current market prices and information for five of the most popular marketplaces in the region – updated by the radio station staff (these services were made available in two languages: Akan and Ewe). Finally, the service provided the callers with the ability to leave feedback voicemails to the radio station. The phone number to access the Freedom Fone service was repeatedly announced live on the air, both during and outside of the regular timeslot for the weekly farm radio broadcast.

The data collected from the study in Ghana included all call data records (CDR) taken from the internal database of the Freedom Fone server software which gave detailed information about each incoming call including the callers number, time of call, duration of call and the last piece of information accessed before the call was terminated (callers hangs up). Additionally a telephone based survey was conducted with 25 callers/users of the Freedom Fone service to determine their age group, education levels, gender, preferences for using the service, feedback on improving the service and questions about their practice of the promoted agricultural improvement. Finally, data was extracted from a household survey conducted in various listening communities connected to Volta star, about farmers' awareness of the Freedom Fone service, how many times the service was called and why or why not the service was used.

The collected data was imported into SPSS 18 and crosstabulation procedures were run on the datasets.

### **Results and discussion:**

From the cdr data extracted from all calls to the Farmers Fone in Ghana, the total number of calls to the system were 3886 calls over a two month period (segmented into 10 day intervals in Figure 1). The maximum number of calls (1668) were made during the first ten days of the service and the number of calls reduced considerably afterwards. This can be attributed to the announcement of the new Farmers Fone service over the radio to which listeners responded by calling the service out of curiosity and interest.



After the first two weeks of announcing the service, regular listeners became familiar with what the service offered when they called. After these first two weeks some callers continued to use the service on a regular basis while others stopped calling.

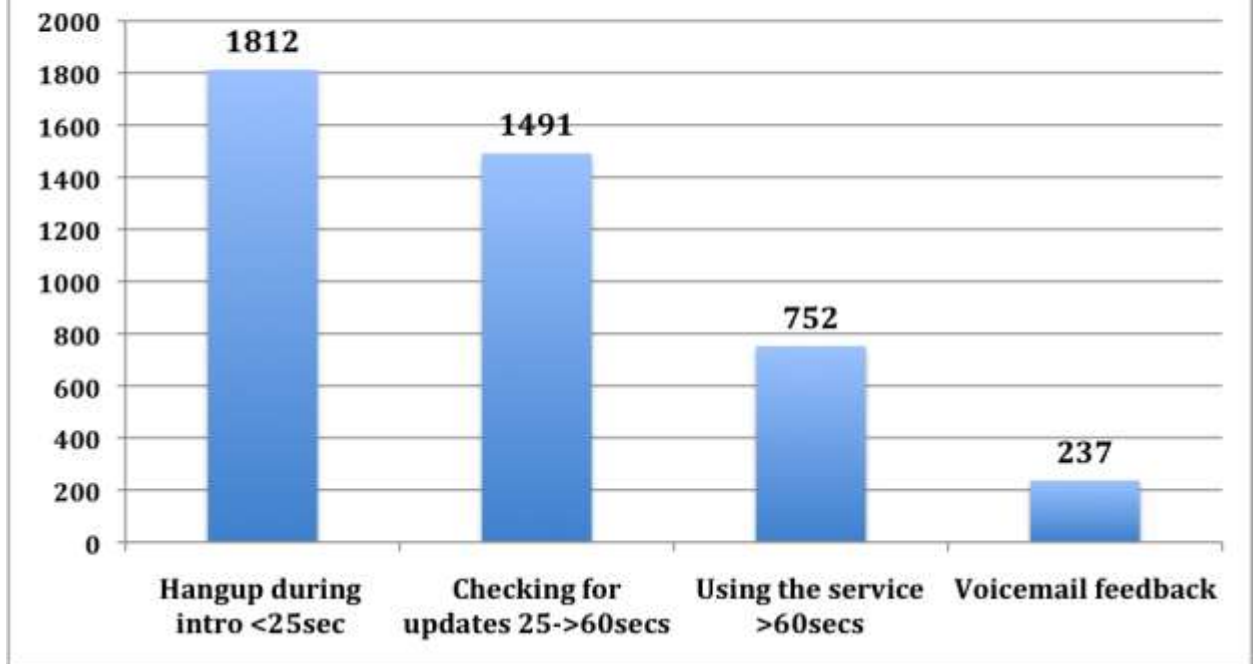
The cdr was grouped into categories based on the duration of the call to identify the purpose of their calls. The first group of calls to the system, about 42% (1812) were callers who hung up during the welcome message which was less than 25 seconds (figure 2). This group of calls represents callers who are mainly curious about the nature of the service and either cannot afford to continue listening, do not understand how to use the system or are not interested.

The second group of calls, about 35% (1491) represents regular callers to the system who spent between 25 and 60 seconds checking to see if the content on the system (market prices and radio program summaries), had been updated since their last call.

The third group of calls, about 17% (752) represents callers who spent over 60 seconds and were using the system the way it was intended: listening to summaries of repeat broadcasts and accessing up to date market prices in their area.

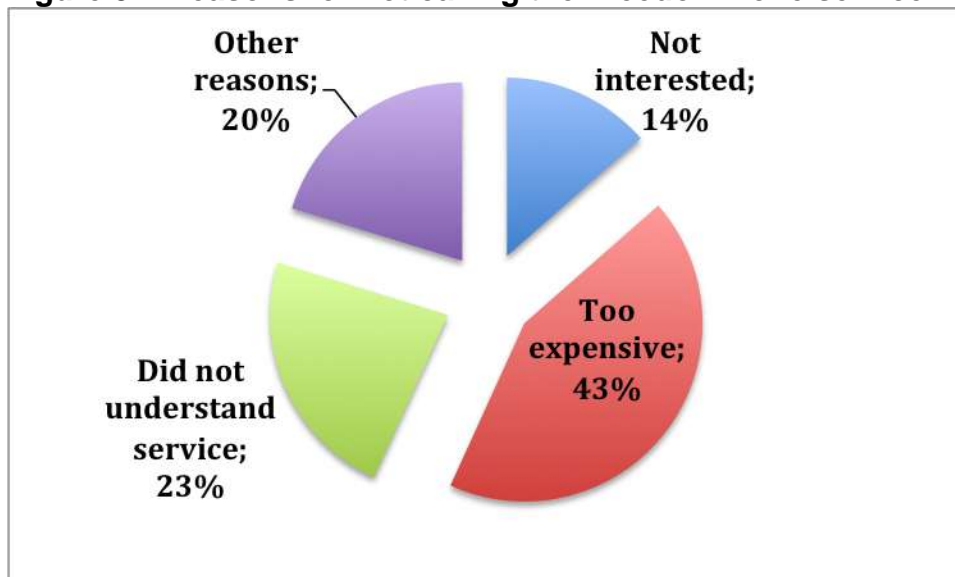
Apart from calling and listening to the repeat broadcasts and market information, a fourth group of calls, about 6% (237), were made by callers wanting to leave messages and feedback for the radio station. Figure 2.

**Figure 2 Frequency of calls to Freedomfone Ghana by call type**



Based on the household survey conducted with various listening communities, only about 21% called the service. The reasons stated by those who did not call provided different reasons for not calling, including: Too expensive (43%), Did not understand the nature of the service (23%), Not interested (14%) and other reasons not stated (20%). Figure 3.

**Figure 3 – Reasons for not calling the Freedom Fone service**

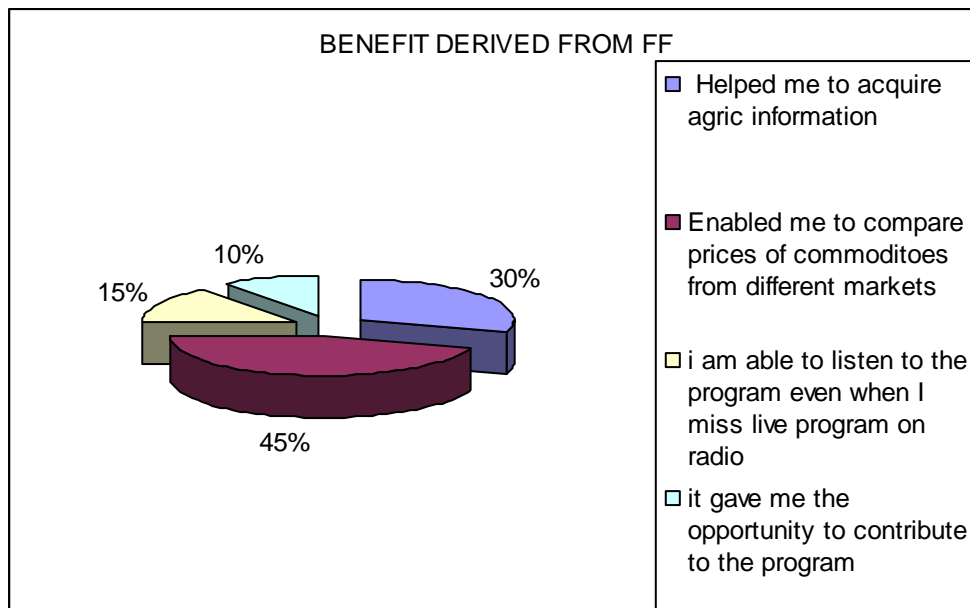


Based on the 25 person phone based survey, it was noted that the Freedom Fone service was used by different age groups. The largest proportion of users were aged between 17-25 years old (40.9%), followed by 26-35 yrs (31.8%) and 35-50 yrs (27.3%). From the same survey, it was observed that education played a significant role in the use of the service. For example only 12% of primary school level educated callers (3 of 25) used the service while 72% of callers (18 of 25) were at a secondary school level education. Unfortunately, nine out of ten callers were men, which indicates a significant imbalance of usage of the service based on gender.

It is evident from this information that it is the young male farmers with secondary level education who made the most use of this modern ICT service.

Based on the representative samples (n=25) through the phone based survey respondents said that the service helped them to access and compare prices and commodities (45%), helped acquire agricultural information (30%), helped listen to rebroadcasts of the programs (15%) and contribute feedback to the station (10%). What we see in this trend is that the value of listening to the repeat broadcast itself is not as important as getting the relevant agricultural information and market prices in a timely and concise manner. Figure 4

Figure 4.



The Freedom Fone deployment at Voltastar radio station in Ghana was not without its limitations. However, the major limitation observed in this study was the system was not updated on a regular basis (weekly). Although the system was benefiting the end users, the price of the call by the farmer to the Freedom Fone service, limited their access to fully utilize the information available.

This study demonstrated that a marriage between traditional farm radio and modern ICTs such as interactive voice response, can enhance the interactivity between listeners, radio stations and other service providers for improvement of the livelihood of farmers.

**References:**

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