

Technological Viewership Measurement System for Educational Receive Only Terminals (ROTs)

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Abstract: Education is a basic tool in the overall socio-economic development of the country. As per population census, the literacy rate of India has gone up to 74.04% in 2011 from 65.38% in 2001 (Status of Literacy [6]). During this decade, a number of technology supported efforts were initiated, a major initiative was launching of a dedicated educational satellite (EduSat) in September, 2004 to provide the quality education to every corner of the country and to achieve the zero illiteracy figure. The majority of EduSat networks were consist of DTH type ROTs (Direct to Home type Receive Only Terminals), its configuration is given in and functioning is given in Desai et.al. [3]. To find out the resulting impact of such initiative, a number of studies are conducted by various government and non-government agencies. Bhandigadi [2] and Agrawal et al [5] have conducted an impact study of satellite supported educational project of Karnataka state and Rajiv Gandhi Project for EduSat Supported Elementary Education (RGPEEE) respectively. These studies were based on data collected using the traditional questionnaire methodology.

This paper present a technology supported audience measurement system, especially for the satellite supported DTH type ROTs. The proposed model will be able to provide timely and more authenticate data to the government authorities for the purpose of impact study.

I. INTRODUCTION

A. Satellite Enabled Education: An overview

Education plays an important role in the overall development of the each citizen of the country. Admitting the same, the government is making all possible efforts to ensure the availability of quality education to every citizen of the country. In addition to the popular programmes like DPEP (District Primary Education Programme), SSA (Sarva Shiksha Abhiyan, the government is also encouraging use of ICT (Information and Communication Technology) enabled educational opportunities for reaching to unreached launching a dedicated educational satellite (EDUSAT) in September, 2004. The major portion of the receiving end in the network was in the form DTH type ROTs (Direct to Home type Receive Only Terminals) with prime objective to ensure uninterrupted quality education on equity basis to all.

Periodically, a number of impact studies were conducted to record the effectiveness and impact of these projects. The sample data to conduct these impact studies usually gathered using the traditional methods viz. questionnaire, feedback and interviewing but they are not supported with any technological evidences to check the authenticity of the data. A number of research viz. Bhandigadi [2], Desai et.al.[3], Agrawal et.al.[5] have studied about a few satellite enabled educational projects using the traditional methods of data collection.

B. Technology adoption

To overcome the drawbacks of traditional impact study methodology, the integration of "People Meter" device is proposed at the all/partial receiving end of the network. This proposed device has capability to record the authentic data about the scheduled educational transmission in digitized form.

The same is already available in the field of Television Audience Measurement (TAM)/Television Rating Point (TRP) to indicate the popularity level of the various channels. Its adoption will confirm whether the receiving end was switched on during the scheduled transmission or not available for the audience. This approach gives an opportunity to cross check the collected data in questionnaire form with technology supported recorded data available in digital form.

II. SATELLITE ENABLED EDUCATION SYSTEM

With the launching of the dedicated educational satellite, the government of India had initiated a number of pilot projects in various parts of the country with main objective to ensure the equal access of quality education to all.

A. ICT supported initiatives

The government has undertaken the ICT enabled educational opportunities for reaching to unreached. In this regard, a dedicated educational satellite (EDUSAT) was launched in September, 2004 to increase the literacy rate, recurrent training to teachers, sharing of e-resources and expertise to ensure the availability of quality education. The major portion of the Satellite supported network was in the form DTH mode ROT (Direct to Home mode Receive Only Terminal), in which receiving end can only able to watch the transmitted programmes. A number of project in the pilot mode have been initiated to ensure the optimum use of satellite with pre determined objectives viz.

- The Rajiv Gandhi Project for EduSat Supported Education (RGPEEE) was initiated to support in elementary education for the students of Seven Hindi speaking states of the nation. The network comprises of 1200 Ku-Band beam supported Receive Only Terminals (ROTs). Later in 2nd phase 40 Satellite Interactive Terminals (SITs) were provided to conduct the training, monitoring and feedback purposes.
- The Primary School Project of Chamarajanagar and Kenchanahalli, Hobli in Karnataka was initiated by providing about 1000 ROTs.
- Another major initiative was taken by the Harayana Government (Panchkula) with five channels to cover entire gamut of education viz. Primary Education, Secondary Education (two channels), Colleges and Technical Institutions. In this network about 9000 Primary Schools and 1250 Arts Senior Secondary were provided the ROTs. In addition to this 92 Government Aided Colleges and the technical Engineering

colleges and polytechnics provided the facility of Satellite Interactive Terminal (SIT).

B. Configuration of Satellite Enabled Educational Receive Only Terminal (ROT): RGPEEE Network

The Rajiv Gandhi Project for EduSat Supported Project for Elementary Education (RGPEEE) was started in December 2005 with the core objective of meeting the challenges of quality in education to all. This was a collaborative project of Ministry of Human Resources Development (MHRD), Distance Education Council (DEC), Indian Space Research Organization (ISRO), India Gandhi National Open University (IGNOU), DEP-SSA and the concerned State Governments (Gupta et al 2008) with a network of about 1200 Receive Only Terminals (ROT)s in the Hindi speaking states of the country viz. Madhya Pradesh, Chhattisgarh, Uttar Pradesh, Bihar, Jharkhand, Rajasthan and Uttarakhand.

The ROTs under the RGPEEE network configured basically with a DTH type ROT having solar powered backup support where the availability of power supply is yet a teething factor. The transmission scheme adopted for the network is Digital Video Broadcasting (DVB) based on the MPEG-2 video-compression technique. The configuration of an educational ROT is shown in Fig. 1.

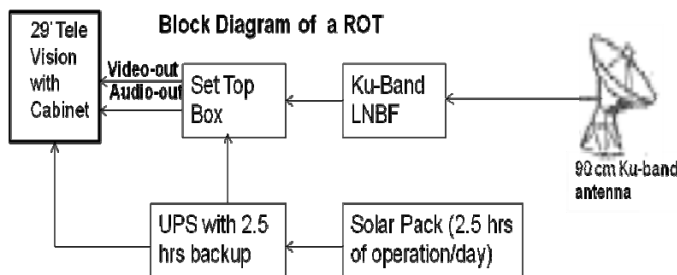


Fig.1: Configuration of DTH type Receive Only Terminals (ROT)s
C Objectives

- Contribution to achieve 100% literacy rate goal.
- Uniform access of quality-curriculum on equity basis,
- Emphasis on hard spots viz. English, Mathematics.
- Reviving the interest of children in classroom studies.
- Recurrent training to the teachers to update the subject knowledge, as well as to train them to use ICT in education.
- To provide access to quality education, particularly for far flung/remote location schools.

III. NEEDS OF IMPACT STUDY

With the spent of huge amount on satellite and other infrastructural support, an authentic measurement system is required to evaluate the impact and return of the expenditure. The availability of authentic information plays an important role to take the appropriate policy decision regarding the project.

- Impact study is a key tool in planning and implementation of policies in effective manner for the betterment of the society and citizen of the country.
- The outcome of the impact study of any project in pilot phase determines whether a project should be continued or dropped. This also helps to incorporate the suggestions to enhance the performance of the project.

- The impact study of an ICT enabled educational system may be used to rate the quality of curriculum and educational contents.
- Based on finding of impact study, an action plan may be planned.
- The availability of authentic audience measurement information plays an important role to take an appropriate policy decision regarding the project/scheme.

IV. TRADITIONAL METHODS OF IMPACT STUDY

To study impact of the project, a researcher usually collects sample data using the traditional methodologies as shown below.

- Questionnaire
- Interview
- Telephonically
- Feedback Forms
- Using Log book

Amongst the above, the questionnaire is most commonly used methodology to collect the data for the purpose of the impact study. Usually in this approach, the feedbacks are collected by asking a series of questions from the target people with a number of choices to answer the question. Finally, these data are analyzed using a set of statistical and mathematical tools to know the trend of the initiative. Undoubtedly, all the above methods for gathering the data are efficient and popular amongst the researcher but unable to provide supporting evidences regarding the collected feedback for confirmation and cross-checking purposes. Roy et.al.[4] and Agrawal et.al.[5] have studied about the impact of RGPEEE project collecting the feedbacks from the students, teachers, parent etc. and suggested a number of concluding remarks after analysing the data.

In the study undertaken, the sample data are collected by asking a series of questions from the target people with a number of options to answer for each question. Later, these gathered data may be analyzed using the computer and a set of software. The outcome of such studies helps to take the appropriate decision at the appropriate time.

Here data are not supported with any technological evidences to authenticate the viewership details with collected data in the form of questionnaire. The methodology is also unable to authenticate the following:

- Whether the ROT was switched on during the scheduled transmission?
- Whether the ROT was functioning on frequency assigned to the network?
- Whether the electric power was available during the scheduled transmission?
- Whether the target audience was present during the transmission?

V. PROPOSED TECHNOLOGY ENABLED DATA COLLECTION SYSTEM

To answer the above raised doubts and questions; we suggest for the integration of a device "People meter", which is capable to record the timing, frequency and other details of the transmission.

People meter: It is a device with a size of a paperback book, which is placed on each TV set in the receiving end. This meter is capable of accurate monitoring every second, what is being viewed at the remote end, by whom, and of storing this data. The data is

then periodically transmitted by means of the telephone to a central location for analysis purpose, Policy Guidelines [7].

The technology is already available and implemented for the TAM (Television Audience Measurement)/ TRP (Television Rating Point), which indicates the popularity of the channel/programme. This rating helps to decide the advertisement rates for various programmes/channel. In India INTAM (Indian Television Audience Measurement) and a few other agencies are providing services to evaluate the rating of the channel/programme.



Fig. 2: “People Meter” Device for DTH type ROTs with Remote

A typically People Meter (Fig. 2) rests on the top of the TV with 8 lights in front side, numbered from 1 to 8 with its own remote control. After switching on the TV, all lights start flashing. These lights may be used in planned manner for different category of audience like students, parents, teachers etc. In case button is not pressed for a stipulated time then assuming that no one is in the classroom, the People meter does not records viewing details. To record the viewing details, the suitable button must be pressed.

To collect the technology supported authentic data for purpose of the impact study, the People meter device may be integrated with the ROTs. This is a costly device so if budget does not permit to deploy at every receiving node then we may install atleast 20-30% of total receiving ends of different geographical and demographic sectors.

VI. BENEFITS OF THE PROPOSED TECHNOLOGICAL ENABLED SYSTEM OF DATA COLLECTION

- Availability of authenticate audience measurement data in digitized form.
- The authenticity of data may be checked with the recorded data and data collected in the questionnaires.
- In case feedback details do not match with recorded data of “People meter” then we may conclude about the discrepancy between recorded and manually collected data.
- Periodic data shall be available for the monitoring and control the activities for the government and other authorities.
- Least human intervention with regards to audience measurement.
- We can install the people meter devise at cluster/block/district level in all or identified receiving ends.

- Periodically, the “People Meter” device may be shifted to other places.
- The recorded data may be very useful for the government and policy maker to monitor, control and to know the true impact of the launched schemes/projects.
- The recorded information shall be available in the digitized form so directly available to software for the computation and analysis purpose.

VII. CONCLUSIONS

Proposed technologically enabled audience measurement system is a recent approach in the field of Satellite Supported Educational Receive Only Terminals network. With the integration of proposed “People meter” technology at the receiving end, the authorities may get periodic television audience measurement information for the purpose of effective monitoring, controlling and optimum returns of the investment. The device may be used in planned manner to record categorized audience measurement information so recorded data will be available to analyse the impact and feedbacks regarding various category of target audience. Another benefit is availability of the information in digital form so the same will be readily available to software for the purpose of computation and analysis.

The contents of paper will provide exposure about the integration of the proposed technology alongwith further enhancement of existing audience measurement system for satellite supported Educational Receive Only Terminals.

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