

ASSESSING THE LISTENERSHIP, REACH, AND RADIO PROGRAMS' EFFECTIVENESS OF DXGG 104.5 FM EDUCATIONAL RADIO

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ABSTRACT. *Campus radio is still significant nowadays as an effective tool in reaching out to the community with information necessary for development. Hence, this study on radio listenership, reach, effectiveness, and broadcast preferences helps gauge its usefulness in carrying out its social responsibility to its immediate community by analyzing feedback from the community it serves. The study aimed to determine the listenership, reach, extent of effectiveness, listeners' program, and listeners' broadcast format preferences of the DXGG 104.3 FM radio as a medium for information dissemination of the institution. Six Hundred and Five respondents were surveyed using the purposive sampling method from ten barangays within the 10-kilometer radius of the radio station. The study revealed that only 13 (40.63%) areas out of 31 have clear signals with a general strength average of 2.1-3.0. while the 10 km radius coverage of the radio station was not entirely reached. It has an overall rating of 3.77, or good on the program's effectiveness. It showed a very high positive correlation between the effectiveness of the radio as a platform in promoting awareness of university programs ($r = 0.878, p < 0.01$) and radio's reach and listenership ($r = 0.515, p < 0.01$), which implies that as the radio's reach and listenership increase, the effectiveness of radio likewise increases. Hence, campus radio, which serves as a platform for information dissemination and depends mainly upon its capability to reach areas and locations with active radio listeners, must increase its bandwidth to serve its immediate community better.*

Keywords: Listenership, Reach, The Effectiveness of Radio Programs

1. INTRODUCTION

Assessing the signal strength, reach, and effectiveness of university campus radio offers several advantages to the institution that operates one. It is instrumental in evaluating the campus radio's indispensability and effectiveness as a means of reaching out to the community through its various radio programs on air. Moreover, assessing its signal strength, reach, and effectiveness helps promote the campus radio to the community.

Radio is the most effective and easily accessible information medium, even in modern technology [1]. It has been used in different formats for educational purposes around the world. It is accessible to people all day long. People could listen at any place and at any time. It can also give more entertainment to the community in terms of music and programs. Radio plays an essential role in the community as it can transform society by reporting changes through information transmission to society [2]. It is a crucial medium for universities to contact and interact with their communities.

In most cases, campus radio is operated on a non-commercial system. Non-commercial radio is owned by non-profit groups, usually of "state governments, local municipalities, college universities, public school boards, and community foundations" [3]. The USTP DXGG 104.3 FM, as an educational FM station, was initially owned and managed by the former Misamis Oriental State College of Agriculture and Technology, now called the University of Science and Technology of Southern Philippines-Claveria campus under their amalgamation as per RA 10919. The radio was launched in 2010, broadcasting live in Claveria, Misamis Oriental, with a range of 10 kilometers from the station's transmitter. It serves as a platform for students and faculty alike to improve their communication skills in terms of media communication, particularly in delivering updated news and information to the public and in extending technology solutions to the community through various radio programs aired. The radio

programs intend to educate students, local communities, and diversified audiences. Thus, programs are varied and aired by student leaders and faculty from different colleges.

Since the start of its operation, there has been no study on the signal strength, reach, and effectiveness of radio programs aired. The educational FM station was not yet able to name the specific areas reached and not reached by the station within its 10 km radius. There is the assumption of the frequency range of 10 kilometers, but there was feedback that some areas within the radius are not reached. Aside from that, there are also text messages from the listeners who claim to be texting from outside the 10 km range. There are also assumptions on the effectiveness of programs aired, but no specific reliable data supports such beliefs. Regular feedback from the listening public is essential to identify listeners' preferences [4]. Hence, this study.

The result of the study is of prime importance to the University's campus radio management and to the campus itself; the result will provide them with baseline data of locations that are reached and not reached by the radio and the effectiveness of programs currently aired and some factors that have affected the radio's reach. Overall, the study provides empirical evidence to show the effectiveness of the radio and its aired programs as a medium for information dissemination and technology transfer necessary for rural development. Finally, it seeks to find out and present the relationship between the radio's listenership and reach and the radio programs' effectiveness as a platform for disseminating informative and educational programs to the public.

2. OBJECTIVES

The overarching goal of the proposed study is to assess the relevance and essence of the radio station's existence in terms of its signal strength, reach, and effectiveness of programs aired. Specifically, the study seeks to:

1. Describe the signal strength of 104.3 USTP Radio and the factors affecting it;
2. Identify the different areas reached by the frequency range of campus radio;
3. gauge the respondents' listenership to the campus radio programs;
4. measure the effectiveness of the university radio programs aired promoting awareness of relevant local and national issues and other helpful information to the community; and
5. find out the correlation between respondents' listenership, the radio's reach, and the effectiveness of the campus radio as a platform for promoting awareness of university programs.

3. THEORETICAL FRAMEWORK

This study is anchored on the Uses and Gratification Theory of Blumler and Katz [5]. The theory suggests that media users play an active role in choosing and using the media. The theory places more focus on the consumer or audience. It assumes that audience members are not passive but actively interpret and integrate media into their lives. The theory also holds that audiences are responsible for choosing media to meet their needs. The approach suggests that people use the media to fulfill specific gratifications. This theory would imply that the media compete against other information sources for listeners' gratification.

Likewise, this study adheres to the Social Responsibility Theory of the Press as one of the Normative theories, which suggests that the media should act for the benefit of society at large and is disconnected from the socio-political condition. The Social Responsibility Theory was formally designed by Siebert, Peterson, and Schramm in 1956 in their book "Four Theories of the Media," which was later developed and advanced by other scholars. The theory emerged in the mid-twentieth century. Social responsibility is an ethical theory in which individuals are accountable for fulfilling their civic duty; the actions of an individual must benefit the whole society [6]. This theory helps explain the role of campus radio towards society as a whole because media plays an essential role in social life. Campus radios, operated by everyday companions and trusted groups of people, play a vital role in shaping the minds of their listeners. Keeping in view "social responsibility," in this study, the researchers intend to evaluate and analyze the effectiveness of the campus radio programs, which serve as one avenue for social responsibility extension by gauging the campus radio signal strength, reach, and effectiveness.

4. REVIEW OF RELATED LITERATURE

Campus radio is vital in reaching out to students and broadcasting programs that benefit its listening communities. According to a survey conducted by Kantar Media on the Frequency of radio usage Philippines in 2018 published by Statista Research Department on Nov. 23, 2021, 62% of the respondents in the Philippines stated accessing media through radio or audio for the past 12 months. Notably, 52% of consumers have used radio to access media [7].

According to the study done by AZ Research PPL, 82% of people have been tuning in to radio during the lockdown, with FM channels emerging as the second most credible

source of information for the masses.[8] In a study on the role of community radio in information dissemination to rural women in South Africa, findings reveal that although community radio stations are recognized as support systems for information dissemination in rural communities, their role in information dissemination and the community development of women has not been fully explored [9]. These findings allow retrospection on the role of the existing campus radio and its social responsibility to the community. In a study on the effects of temperature and humidity on radio signal strength in outdoor wireless sensor networks, results show that weather conditions affect received signal strength. Of the studied weather variables, variation in signal strength can be best explained by the variation in temperature. We also show that frequency diversity can reduce the effects of channel-specific variation and the difference between the transmit power levels [10]. This is very relevant to the study since the location of the campus radio is about 942 m above sea level, situated in a sloppy terrain where rainfall frequently occurs, particularly late in the afternoon.

Khan, in his study, found that community plays a pivotal role in making the masses aware of their fundamental rights and duties [11], not only limited to solving problems an ordinary man faces daily. Community radio becomes one of the crucial instruments in strengthening our "Right to Freedom of Speech and Expression." Community radio is also an intermediary between the Government and the local masses. This supports the study since findings show the comparison of the expected feedback the radio listeners on the programs aired by the radio.

Meanwhile, as to audience reach of radio in the Philippines, about two out of five – 41.4% listen to the radio at least once a week. Radio reaches 85% of Philippine households, based on 2012 data (National Commission on Culture and Arts cited by Communication with Disaster-Affected Communities Network, 2012, p.13) [12].

A study on Simli Radio as one of the communication channels in Ghana found that it has encouraged target communities to participate in program activities and replicate skills acquired.

5. MATERIALS AND METHODS

The study adopted the descriptive method of research using purposive sampling to gather information needed in the survey. The study used actual determination of signal strength and reach in identified areas or study locations. The study used a survey questionnaire with in-depth interviews to assess the radio program's effectiveness. Data were collected from identified and selected sites, specifically areas in the 10-kilometer frequency range of DXGG 104.3. These barangays include as following: Ane-i Hinaplanan, Kalawitan, Lanise, Luna, Panampawan, Patrocinio, Rizal, Tamboboan, Sta. Cruz and Poblacion.

The researchers devised a matrix where the station's signal strength, distance of the area from the station, and the area's topography were recorded. Signal strength was described as follows:

- 2.1-3.0 Very clear signal, no static to disrupt messages
- 1.1-2.0 Fairly clear signal, with minimum static
- 0.1-1.0 Poor signal, sometimes disrupted by static

0 No signal

Topography was classified as: 0.1- 1.0 plain, 1:1-2.0 slightly plain, and 2.1-3.0 slightly plain with hills, and the distance of the area from the radio station in kilometers was also recorded. The researchers used a map to get the estimated distance from the site to the station. To determine the effectiveness of the campus radio programs aired, the researchers interviewed some 600 respondents who were randomly chosen from the nearby barangays within the 10-kilometer radius of the campus radio using a researchers-made interview questionnaire to rate the radio programs using the following scale: 0-1 Poor; 1.1- 2.00 Fair; 2.01-3:00 Good; 3:01-4:00 Very Good; and 4.01-5:00 Excellent. Respondents were interviewed regardless of status, age, sex, and affiliation.

Ethical considerations were well observed. The researchers sought permission by writing a letter to the barangay captain or sitio head of identified areas from the North, East, South, and West within the 10-kilometer frequency range of the campus radio for the conduct of a survey on Radio signal strength, reach and effectiveness Date and time on the behavior of interview is scheduled and coordinated ahead of time to ensure the presence of respondent.

The following scoring with its adjectival rating was used to find out the relationship between the respondents' listenership, the radio's reach, and the effectiveness of the radio as a platform in promoting awareness of the university program.

Table 1. Scoring and adjectival ratings on the relationship between the respondents' listenership, the radio's reach, and the effectiveness of the radio

Numerical Rating		Adjectival Rating
Positive	Negative	
+1.00	-1.00	Perfect positive/negative correlation
0.80 to 0.99	-0.80 to -0.99	Very high positive/negative correlation
0.60 to 0.79	-0.60 to - 0.79	High positive/negative correlation
0.40 to 0.59	-0.40 to - 0.59	Moderate positive/negative correlation
0.20 to 0.39	-0.20 to -0.39	Low positive/negative correlation
0.01 to 0.19	0.01 to -0.19	Little or negligible, if any, correlation
0.00		No correlation

100% of the data were collected from the respondents in the sampled barangays. Responses were tallied tabulated, and analyzed. Descriptive statistics was employed using frequency count, mean and percentages, and correlation coefficient.

6. PRESENTATION AND DISCUSSION

Table 2 shows that the 10 km radius coverage of the radio station was not entirely reached. Only 13 (40.63%) areas in Claveria have clear signals with a general strength average of 2.1 -3.0.

Table 2. Signal Strength of DXGG 104.3 FM Radio

Signal Strength	Description	f	%
2.1-3.0	Clear signal	13	40.63%
1.1-2.0	Fairly Clear	10	31.25%
0-1.0	Poor signal	9	28.13%

Mean: 1.78 Sd: 0.83 Description: Fairly Clear signal

Meanwhile, another 10 (31.25%) areas are classified with a general signal strength average of 1.1-2.0, representing a fair, clear signal with minimum static. Areas classified with the general signal strength of 0.1 -1.0 were poor and sometimes disrupted by static.

The result showed that the farther the place gets, the general signal strength of the radio likewise gets weaker. The result coincides with the study's findings on the Investigation of Signal strength level Generated by Orient 94.4 FM Transmitter in Imo State, Nigeria, which revealed that distance has been shown to affect signal strength generated by frequency-modulated transmitters. The strength of the FM signal generated drops at a distance of 45 km away from the transmitter of Orient 94.4 FM and a very high temperature [14].

On the other hand, topography is another factor that can cause weak signal strength, including irregular terrain hills. Another factor also found by the researchers is the weather conditions. The radio station's signal strength was improved during good weather conditions. While during rainy days, as marked, changes were noticed in the signal received by the transistor. The findings are similar to the study of Akpan (2021) on the effects of temperature and humidity on radio signal strength in outdoor wireless sensor networks. Results show that changes in weather conditions affect received signal strength. Of the studied weather variables, variation in signal strength can be best explained by the variation in temperature [15].

Some factors that affect the signal strength of a specific FM Radio Station are station interference/electrical interference (household appliances) and obstacles which are geographical features that can cause reception problems; mountains, hills, tunnels, and the like can also reduce reception, the fact that Claveria is located in the highlands of Misamis Oriental which is 942 meters above sea level. Attenuation of radio waves increases with increasing transmission line-of-sight distance and the number of absorbers situated along the path taken but increases whenever reflectors.

Table 3. Topography of different areas reached by DXGG 104.3 FM

The type of areas reached	f	%
Plain topography	8	25.80%
Slightly plain topography	12	38.70%
Slightly plain hills	11	35.48%
Total	31	100

Results in Table 3 showed that only 8 (25.80%) areas, namely Zone 1,2,3,4,5,6,7, and 8 of Barangay Poblacion, have plain topography, no hills, and no mountain disruptions. At the same time, 12 (38.70%) areas were identified to have slightly plain types of topography. This includes zones 1-4 of Barangay Tamboboan, Janopolan, Patrocinio, Kalawitan, and Upper Barangay Claveria. Eleven (35.48%) areas were identified to have slightly plain hills type of topography. This includes Barangay Luna, Lanise, Upper and Lower Rizal, Upper and Lower Sta. Cruz and Zone 7, Minsacuba, Sitio Mintalao of Hinaplanan and Lower Kalawitan.

Ratsada sa Kabuntagon, Mga Balita sa Alas Syete, and E-Report Mo kay Chief were among the top three programs rated by respondents. This coincides with the respondents' time to listen early in the morning. These programs are aired early in the morning every day except for *E-Report Mo kay Chief*, which is scheduled alternately.

Table 4. Effectiveness of the Radio Program

Description	Range	Frequency	Percentage
Excellent	4.1- 5	0	0
Very Good	3.1- 4	23	100
Good	2.1-3	0	0
Fair	1.1- 2	0	0
Poor	0-1	0	0
Mean	Sd	Description	
3.77	0.04	Very Good	

Based on Table 4, an average rating of 3.77 or Very Good is rated for all radio programs. None of the programs was rated Excellent or Poor. Results are in unity with the radio's signal strength, which is fairly straightforward. Hence, the rating is not excellent. The result is congruent with the study of Rajadurai on the Impact of Community Radio Programs in Rural Development, which revealed that community radio programs give such knowledge to people in rural areas [16]. As to the effectiveness of the Radio Program in Promoting the University, results showed that the radio had been an effective instrument in promoting the University's Vision and Mission, Quality Policy, and Strategic Direction, with a mean rating of 4.27 (Excellent). This is attributed to the repetitive advertisement as an infomercial of the radio station with its local dialect translation.

Studies made by Dr. Thakur, Research and Evaluation Officer of the National Institute of Open Schooling Government of India (INDIA), state that those individuals who are not listening to radio because they are not aware of any local community that exists in the nearby area, and they only prefer to listen to radio stations which they are familiar with and also the lack of relevance and quality of broadcast. Thakur's study further revealed that women respondents preferred the 11 a.m.-2 p.m. time of listening, saying that they were busy with household chores during the morning and evening hours, and they may not even get access to the radio set because men around the house would use it [17].

Table 5. Relationship between listenership, radio reach, and radio program's effectiveness

Variable	Correlation Coefficient (r)	Adjectival rating	Significance
Radio reach and listenership	0.515	Moderate positive	0.000**
Effectiveness of the radio as a platform for promoting awareness of university programs	0.878	Very high positive	0.000**

Legend: **significant at a 1% level

Table 5 reveals a very high positive correlation between the effectiveness of the radio as a platform in promoting awareness of university programs ($r = 0.878, p < 0.01$) and radio's reach and listenership ($r = 0.515, p < 0.01$), which implies that as the radio's reach and listenership increase, the effectiveness of radio likewise increases. Radio as a platform for information dissemination largely depends upon its capability to reach areas and locations with active radio listeners.

7. SUMMARY AND CONCLUSION

The signal strength of the University campus radio is clear. Thirteen areas have clear signals with a general strength average of 2.1 -3.0. These are the places found proximate to the radio station. The rest areas have poor or fairly clear signals with minimum static. Areas classified with the general signal strength of 0.1 -1.0 were poor and sometimes disrupted by static. The 10 km radius coverage of the radio station was not entirely reached.

The result showed that the farther the place gets, the general signal strength of the radio likewise gets weaker. Factors affecting the signal strength, as observed, include topography. It causes weak signal strength because of its irregular terrain hills. Another factor was weather conditions. The radio's signal strength was improved during good weather conditions. While during rainy days, as marked, changes were noticed in the signal received by the transistor.

The result likewise showed that only 8 areas have a plain type of topography, no hills, and no mountain disruptions. While 12 areas were slightly plain types, and 11 were slightly plain with hills topography. An average rating of 3.77 or Very Good is rated for all radio programs. None of the programs was rated Excellent or Poor.

There is a very high positive correlation between Radio Programs' effectiveness with radio reach and listenership; and a moderately positive correlation between radio reach and listenership to radio programs' effectiveness. A radio station plays a vital role in the community's broadcasting. It contributes much to disseminating formal and informal education information to society. Hence, enhancing technology to reach the desired frequency to reach far barangays needs to be considered.

Meanwhile, the results of the study imply that DXGG 104.3 FM radio, despite its limited reach, has a good number of listeners and it serves effectively, as indicated by its very good ratings in its various radio programs, that these programs are giving knowledge to the rural areas specifically

the farmers and homemakers in the barangays. The University campus-based community radio station serves as the vehicle for supporting grassroots social and economic development. Moreover, the strong correlation between listenership, reach, and effectiveness of radio programs implies that an increase in bandwidth redounds to an increase in signal frequency, enabling the radio to reach the remotest and far-flung barangays whose people need to be reached out with the much-needed information.

8. RECOMMENDATIONS

An increased signal frequency will enable the campus radio to deliver its programs more efficiently to community barangays within reach of the DXDG 104.3 FM Station. Conduct an information campaign to the public relative to the radio station's existence, providing flyers and other information materials for the community's awareness of the recent radio programs.

The fluctuating frequency of some distant barangay signals may be minimized through the advanced installation of the device and other means of technology advancement for stability, reception, and increased effectiveness relative to listenership. Further, the radio station may have an alternative means to motivate the preferences and listening habits of the listeners as to radio programs are concerned. It may promote more good and quality programs, consistently aired to enhance the interest level of listenership.

Finally, as unanimously recommended by the panel of evaluators, the University may offer the program Bachelor of Science in Development Communication to enhance the information dissemination of various technologies of the University to its stakeholders and to provide an avenue for students to develop their communication skills through multiple forms of media to promote active engagement and interaction with University clientele and stakeholders.

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