FM RADIO FOR ANDROID

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ABSTRACT

This project aims to learn the fundamentals of FM radio and how to use the frequencies available in India to play channels. This project also aids in understanding how Android applications function and how to create an Android application. The user can listen to songs, podcasts, news, sports news, latest updates, and so on at a lower cost, as opposed to magazines, television, and so on.

Keywords: *Android Streaming; Radio Streaming; FM Radio; Translator; FM Signals; Transmitter; Bluetooth.*

INTRODUCTION

Radio is a widely used mass communication medium with enormous potential for data dissemination because radio signals cover nearly the entire population. There are 177 radio stations in the country. The radio reaches 97 percent of the population. Radio, as a convenient form of entertainment, has a large audience. With the introduction of transistors, this medium reached the common man in both urban and rural India, though radio is more popular among rural elites. In India, radio broadcasting began in 1922. All India Radio is a government-owned station. Since 1936, radio has dominated broadcasting, but privatisation and deregulation have enabled commercial privately owned talk and music stations to reach large audiences. [1]

During the British Raj, audio broadcasting began in June 1923 with programmes by the Bombay Presidency Radio Club and other radio clubs. FM is an abbreviation for frequency modulation, which refers to the method of encoding an audio signal on the carrier frequency. The 88-108 MHz band is used by FM full power, low power, translators, and boosters. There are various types of radio stations. The smallest provide service within three or four miles of a transmitter site; the largest provide service up to 60 miles away from a transmitter site. Within the 88-92 MHz reserved band, only non-commercial educational radio stations are licenced. The non-reserved 92-108 MHz band may be used by both commercial and non-commercial educational stations. [2]

The basic idea behind this project was to learn the fundamentals of working with various frequencies and how to improve one's knowledge of the Java language. For the longest time, FM radio has been a source of joy for many people all over the world. The main challenges were understanding the project's know-how and believing Future enhancements, Requirements, Diagrams, use case, activity diagram, Scope, and purpose Code, and so on. Licencing and permissions are required: To launch a station app, you must first obtain a licence. Music edging licencing is required for the development of a music streaming app such as Pandora.

Radio app UI/UX design: this is a really important factor that how your apps appear as if it's important to style the app according to the user's requirement, it'll engage more users. The event of the knowledgeable app is required, as is the addition of new elements to style the app quickly.

Choosing a database for music streaming: To play music, an efficient database is required. A massive amount of knowledge is stored and sourced using a cloud-based storage and sourcing solution. AWS is used to perform advanced search and streaming tool functions. [3]

Advantages of an FM Radio:

According to a report released by the media research and consulting firm Jacobs Media Strategies, radio is once again at the top of the heap with the most listeners, but TV/video, and thus the smartphone, is not far behind. The data was gathered from over 51,000 people who were asked about their listening habits. Within the 2017 Tech survey 13, Jacobs organised its findings into two different pyramids: a Media Pyramid and a Brand Platform Pyramid. The radio is at the top of the Media Pyramid. Ninety-one percent of the 51,760 survey respondents said they listened to radio one hour or more per day, a figure that is nearly identical to listener levels found in the 2016 Tech survey 12. Radio provides advertisers with a variety of features, and many of the medium's characteristics appear to be important to advertisers. Radio is thought to be the most personal form of mass media, with advantages over other forms such as selectivity, cost efficiency, flexibility, and imagination. [4]

Important Characteristics:

Radio's primary characteristics are

1) A Sound Medium: It is an auditory medium, or a medium of sound. The spoken words, music, and sound effects are the three components of a broadcast. For listeners, sounds must be pleasant, simple, and easy to understand.

2.) A Voice Medium: Radio serves as a voice medium. Voice is combined with music and sound effects in this procedure. Because a radio listener has a highly developed ear, the broadcaster should not sound fake or untruthful. A genuine vocal expression will frequently touch if the person's mind, soul, psyche, imagination, and body are all in sync.

3.) A Link Between Speaker and Listeners: The microphone is the only instrument used by a radio broadcaster to communicate with his listeners.

Live FM Streaming Apps:

Opportunities for Business Internet radio stations provide tremendous advertising opportunities for the media and entertainment industries. While traditional radio models allow for local advertising, bringing targeted stations to mobile devices is a top priority for many media companies. Target the Masses: Apps compatible with the Android and iOS platforms enable advertisers to target a large portion of the audience, which is not possible with non-portable platforms such as music systems, laptops, and so on. Targeting a genre: Another advantage that radio streaming apps with specific stations provide is the ability to target an audience based on a

genre or preference. With apps that broadcast a single station, the likelihood of a listener switching to a different station is low, increasing the likelihood of advertisements being heard and perceived by consumers. Internet radio apps undoubtedly provide marketers and consumers with a level playing field, with advertisements serving as the revenue model and infotainment serving as an engagement medium. [5]

Objectives:

- While streaming allows you to access a large number of stations, it does not always provide access to all of your local stations.
- Your smartphone contains an FM receiver chip, allowing you to listen to FM radio.
- The smartphone receives FM signals through this chip, analyses them, and then sends the music to the device's wired headphones.

RESEARCH METHODOLOGY

We learned about comparative public policy studies from books, educational and development journals, government papers, and print and online reference resources, to name a few secondary sources. Comparative studies' quality is determined by their internal and external validity. Internal validity refers to the degree to which conclusions can be drawn correctly from the study setting, participants, intervention, measures, analysis, and interpretations. External validity refers to the extent to which the conclusions can be generalised to other contexts.

REVIEW OF LITERATURE

The so-called mapping study, which is used by radio start-ups or in cases of repositioning or relaunching established radio stations, is a very special case of music testing. Mapping studies test up to 50 music genres, each represented by three titles/hooks, to collect data about compatible music preferences of radio market listeners (Schramm et al., 2002). Listeners are not only asked to rate different music genres; they are also asked to assign music genres to existing radio stations in that market, if possible. [6]

The first stage is the definition of requirements, which includes the service, limitations, and objectives. It also identifies a problem with data about how many radio stations in Ponorogo used Android streaming. According to the requirements in journal source results, radios in Ponorogo have converged media to support radio broadcasting activities on average. Websites, radio streaming, Android applications, YouTube, and social media (Facebook, Instagram, BBM, and WhatsApp) are examples of new media [7].

Mobile phones pervade all aspects of communication, but radio is equally pervasive. Both the commercial radio and mobile industries emerged from the same period of liberalisation in the 1990s, and their practises and regulations have become inextricably linked. FM radio has been associated with the mobile in ways that have shaped the culture of outspokenness on the airwaves since its inception (Coker, 2012). [8]

RESULT AND DISCUSSION

When Songgolangit FM Radio Streaming Apps are installed on an Android phone, the user interface is shown in Figure 1.

Figure 1: FM Radio Streaming Apps interface view

Figure 1(a) depicts the SFMR streaming apps when the streaming is active. Figure 1(b) depicts the view of SFMR while it is being launched in the background. Figure 1(c) depicts an SFMR menu when the user clicks on the left navigation. Fig. 1(d) is an SFMR description menu in "Tentang Radio" that displays information about its radio, a profile menu, and contact information.

You can use your phone to receive text alerts, listen to streaming music from services like Spotify and Google Music, and browse the internet from the comfort of your own home. But what if the network goes down or becomes so congested from everyone trying to access information that you can't get through? That is all too often the norm in areas ravaged by natural disasters such as hurricanes, earthquakes, fires, and even shootings.

According to the FCC, more than 76 percent of cell sites in Puerto Rico are still not operational three weeks after Hurricane Maria devastated the island, hampering recovery efforts and putting lives at risk. According to a Time article published last week, this is why officials in Puerto Rico have turned to FM radio stations to help coordinate the pickup and delivery of relief items from ports to communities across the island. There is simply no other way to direct local relief workers where and when to go. [9]

Figure 2: Next Radio's app lets you listen to FM radio on your phone.

Google Play Store:

FM radios have been enabled in the chipsets of many phone manufacturers, including Samsung, LG, HTC, and Motorola. Next Radio, an FM radio app, has published a list of devices and carriers that support its software, which you can download here. The app will detect the activated chip once you have downloaded it.

FM Radio Apps for Android:

Even if your Android phone has an FM receiver and can pick up a signal, you'll need to use an app to convert those radio waves into listenable content. This means you'll have to get a dedicated FM radio app from Google Play. Some apps bombard you with advertisements or push streaming options, whereas others promote a premium option. As a result, finding the best FM radio app

becomes a time-consuming process involving installs, uninstalls, and trials. Here are some of the best Android FM radio apps available to make your life easier.

Samsung began working with Next Radio in 2018 to reactivate the FM chips in their latest devices, beginning with the S9 models. Of course, compatibility is determined by the phone and your service provider. Many unlocked phones and US models have the chip enabled, but only a few do not. In 2018, Samsung began directing customers to the Next Radio app, which is now defunct but still available.

Using Next Radio as an Android FM Radio Tuner—How Does It Work?

Follow these steps to use Next Radio on Android:

1. Download Next Radio from the Google Play Store, then plug in your wired headphones and select "Open."

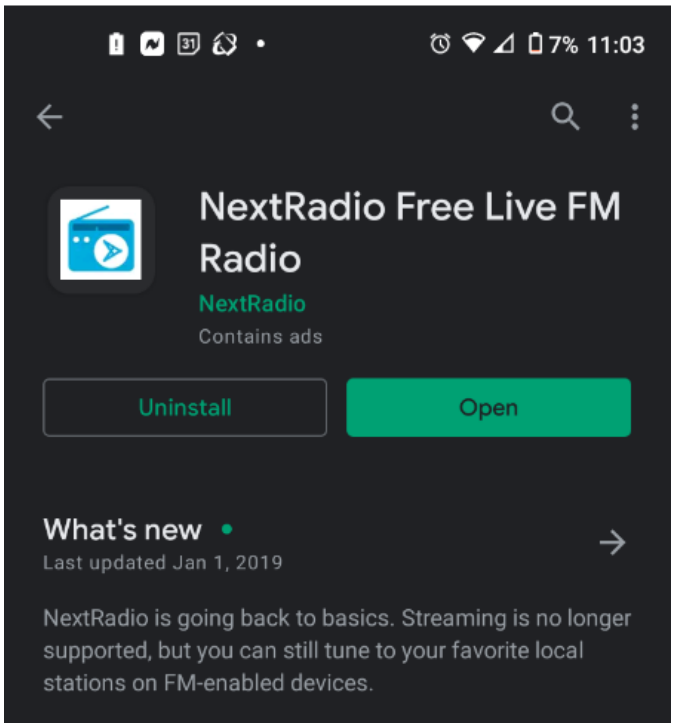

Figure 3: Install Next Radio from Google Play Store (Source: alphr.com) [10]

Benefits of Using FM Radio on Your Phone

Although you can stream radio stations using various apps, using an FM tuner has distinct advantages.

The fact that you don't have to use data to connect to the radio is probably the biggest advantage. It's completely free to use, just like it is in your car or on another device. If you don't have consistent Wi-Fi access or have limited data, use your phone's radio.

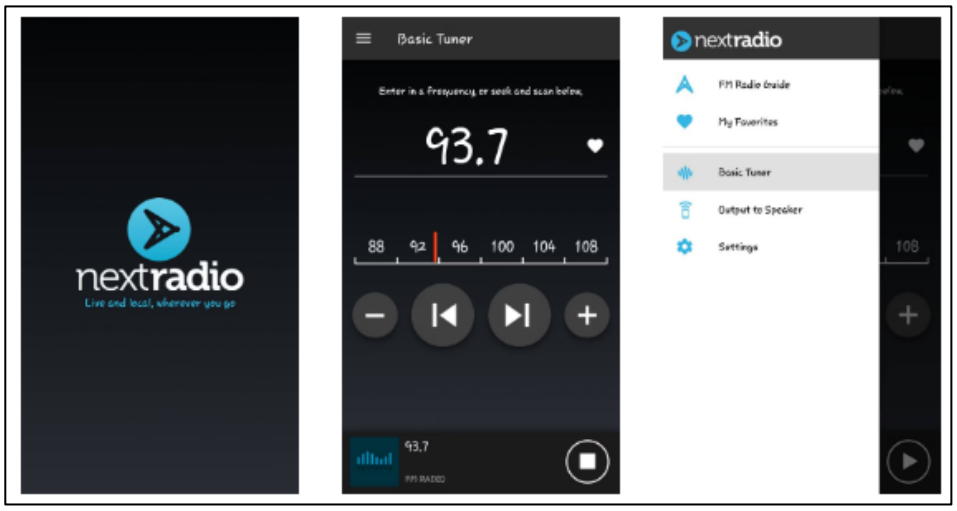

Figure 4: Next radio (Source: makeuseof.com)

While streaming allows you to access a large number of stations, it does not always provide access to all of your local stations. If you listen to them on FM radio, you'll find every station available in your area.

The FCC recommends carrying a radio in case of an emergency, such as a tornado or severe storm. This ensures that you can stay informed or communicate even if your phone lines and internet go down. Because home radios are becoming less common, converting smartphones into radios makes perfect sense.

To listen to FM radio on your phone without a data connection, you'll need a few things:

- A phone with a built-in FM radio chip: Your phone requires FM radio capability, which must be enabled. This necessitates the manufacturer activating the functionality and the carrier accepting the feature.
- Wired earbuds or headphones: FM radio requires an antenna to function. When you listen to an FM radio broadcast on your phone, the antenna is made up of the wires in your earbuds or headphones. [11]

Everything you need to know about FM radio on your phone:

In the last two years, wireless carriers and phone manufacturers have warmed to the concept of FM radio access. The reasons are likely to be public safety benefits and the fact that broadcast radio would have little impact on people's data use. FM chips can now be activated by major US carriers. FM radio has been enabled on phones manufactured by Samsung, LG, HTC, and Motorola.

FM radio access is more than a convenient or entertaining perk. Devastating hurricanes and wildfires that have impacted millions of Americans have highlighted the vulnerabilities of mobile phone infrastructure, as well as the critical role communications systems play in disasters. This has also highlighted the advantages of good old-fashioned broadcast radio for efficiently disseminating information in an emergency.

Using Android as an FM Transmitter:

Android mobile devices provide on-the-go Internet access and can even stream your favourite songs to your car stereo. With a few simple settings changes, your Android device can be converted into an FM transmitter, allowing it to play stored music through your car's audio system. There are numerous conversion methods available to accommodate a wide range of car stereo makes and models.

Bluetooth:

You can now listen to your stored music on your Android through your car radio, though you may encounter static from time to time unless you find the strongest available FM frequency.

Transmitters

An external FM transmitter connected to your Android device via its 3.5mm headphone jack will broadcast available FM frequencies through your stereo.

Modulators

While the premise is similar to that of an FM transmitter, an FM modulator provides superior performance without the worry of static. A modulator connects directly to your stereo's aerial port and your car's aerial antenna, as opposed to an external transmitter, which connects to your Android and sends signals to your stereo receiver.

Considerations

Most external transmitters and modulators require you to download and install a specific app on your Android device. While such apps are typically free, in order for the app to be useful, you will need to purchase the developer's FM transmitter hardware, such as the external transmitter itself. Furthermore, while converting your Android device to an FM transmitter can bring your stored music to your car stereo, it should only be used as a last resort due to the occasionally-spotty sound quality. If your car stereo has an aux-in port, connecting a 3.5mm stereo aux cable to your Android's headphone jack will provide the best sound quality possible. [12]

CONCLUSION

Radio broadcasters must prioritise the increased availability of FM-enabled phones on the market. Broadcasters can provide FM radio with a user experience similar to that of streaming radio on mobile devices, but without the latency, service interruptions, data consumption, battery drain, and lack of local or emergency information typically associated with streaming services.

REFERENCES

1. KomwitSurachat, SupasitKajkamhaeng, Kasikrit Damkliang, Watanyoo Tiprat, and Taninnuch Wacharanimit, ―First Aid Application on Mobile Device‖, World Academy of Science, Engineering and Technology, International Science Index Vol.7, No.5, 2013.

2. Mona ErfaniJoorabchi, Ali Mesbah and Philippe Kruchten, ―Real Challenges in Mobile App Development‖, Empirical Software Engineering and Measurement, 2013, ACM / IEEE International Symposium, pp. 15-24.
3. Neil Smyth, Android Studio Development Essentials, CreateSpace Independent Publishing Platform, 2016.
4. Bukhari S S F, 2016 Int. J. Linguist. Commun. 4 (1) 58
5. Asy'Ari N A S and Muriyatmoko D 2020 J. Phys. Conf. Ser. 1471 1
6. Schramm, H., Petersen, S., Rütter, K., & Vorderer, P. (2002). Wie kommt die Musik ins Radio? Stand und Stellenwert der Musikforschung bei deutschen Radiosendern [How does music get on the radio? Status and significance of music tests in German radio stations]. Medien & Kommunikationswissenschaft, 50, 227–246. doi:10.5771/1615-634x-2002-2-227
7. Asy'ari N A S 2018 Broadcasting Radio Ponorogo dalam Kajian Konvergensi Media Petanda J Ilmu Komun dan Hum 1 37–43
8. Coker W (2012) Mobile communication and the culture of self-expression: the case of SMSing to radio in Ghana. Journal of Media and Communication Studies 4: 123–133.
9. The fieldwork in 2018 was conducted with Silvia Lindtner, University of Michigan, in Accra and Shenzhen. Together, we interviewed, among others both Chinese and Ghanaian staff of mobile phone companies like Tecmo and observed how these businesses were conducted.
10. P. Felt, M. Finifter, E. Chin, S. Hanna, and D. Wagner, "A survey of mobile malware in the wild," in Proc. 1st ACM Workshop on Security and Privacy in Smartphones and Mobile Devices (SPSM'11), 2011, pp. 3–14.
11. H. Kim, J. Smith, and K. G. Shin, "Detecting energy-greedy anomalies and mobile malware variants," in Proc. 6th Int. Conf. Mobile Systems, Applications, and Services (MobiSys'08), New York, NY, USA, 2008, pp. 239–252, ACM.
12. P. Felt, M. Finifter, E. Chin, S. Hanna, and D. Wagner, "A survey of mobile malware in the wild," in Proc. 1st ACM Workshop on Security and Privacy in Smartphones and Mobile Devices (SPSM'11), 2011, pp. 3–14.