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Report On Frequency Interruption in Radio Stations across the Country

February 2023



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TABLE OF CONTENTS

ACKNOWLEDGEMENT	iii
TABLE OF CONTENTS	iv
TABLE OF FIGURES	v
CHAPTER ONE	1
1.0 INTRODUCTION	1
1.1 Requirements for Licensing	1
CHAPTER TWO	2
2.0 CONTEXTUAL BACKGROUND	2
CHAPTER THREE	3
3.0 PURPOSE AND OBJECTIVES OF THE STUDY	3
3.1 Purpose of the study	3
3.2 Objectives of the study	3
3.3 Research questions	3
3.4 Scope of the study	3
3.5 Limitations of the study	3
CHAPTER FOUR	4
4.0 ANALYSIS OF FREQUENCIES REPORT	4
4.1 Time of monitoring	4
4.2 Duration of monitoring	4
4.3 Was the radio station's frequency free of interference?	5
4.4 Content monitored as evidence of successful listening in the morning hours	5
4.5 Content monitored as evidence of successful listening in the evening hours	7
4.6 Duration of frequency interference	9
4.7 State/rationale behind the frequency interference monitored in the morning hours	9
4.8 State/rationale behind the frequency interference monitored]in the evening hours	10
4.9 List of stations monitored.	11
5.0 CONCLUSION	12

LIST OF FIGURES

Chart 1: Monitoring periods	4
Chart 2: Monitoring Duration	4
Chart 3: Radio station's frequency interference status	5
Chart 4: Duration of frequency interference	9
Chart 5: State/rationale behind the frequency interference – Morning hours	9
Chart 6: State/rationale behind the frequency interference – Evening hours	10
Chart 7: Remedies offered by the Radio stations	11
Category 1: Content monitored as evidence of successful listening in the morning hours.	5
Category 2: Content monitored as evidence of successful listening in the morning hours.	6
Category 3: Content monitored as evidence of successful listening in the morning hours.	7
Category 4: Content monitored as evidence of successful listening in the evening hours.	7
Category 5: Content monitored as evidence of successful listening in the evening hours.	8

CHAPTER ONE

1.0 INTRODUCTION

According to the Communications Authority (CA) a robust radio frequency monitoring system promotes compliance to radio license conditions, faster response, and resolution of interference, enhances consumer protection and ensures orderly development of radio communication systems and services. (Kenya C. A., Authority Launches New Spectrum Monitoring and Mngement System in Nyeri, 2021).

Further, frequencies ensure there is little competition when using a specific frequency band, which can cause interference if the same frequency band is used for different and unregulated purposes. This regulation is controlled by various governmental and international organisations. (Techopedia, 2017).

Therefore, frequency allocation is a critical aspect of wireless communication, as it determines the efficiency and effectiveness of communication systems. (Frackiewicz, Frequency Allocation, 2023)

1.1 Requirements for Licensing

The frequency spectrum is a scarce and finite public resource that can support a limited number of users. Managing the radio spectrum therefore involves weighing up a range of competing factors to ensure the optimal use of all frequency bands. These factors may include:

- Ensuring that requirements of all radio services are met in an appropriate manner.
- Maximising social benefits arising from radio use, for example, in relation to public safety, national security and emergency; and
- Enhancing the country's competitiveness by ensuring that adequate spectrum is allocated and assigned to users that derive reasonable economic value. (Kenya C. A., Frequency Spectrum Management Guidelines, 2020)

In Kenya, licensing and frequency allocation is the prerogative of the Communications Authority of Kenya. However, in its attempt to monitor and analyse content, the Media Council of Kenya comes across challenges related to access to radio as an important medium and tool of communication. We have noted challenges of frequency interference and overlaps, which we document in this treatise.

CHAPTER TWO

2.0 CONTEXTUAL BACKGROUND

Radio is a popular medium of communication and entertainment in Kenya, with over 200 licensed radio stations operating across the country. However, one of the greatest challenges facing the industry is the terrestrial radio frequency interference, which has steadily worsened over time as the globe has been populated with an increasing number of transmitters and other radiating sources which in turn has a significant impact on the quality of radio broadcasting (T.Dyson, 2001).

Radio frequency interference is defined as the effect of unwanted energy due to one or a combination of emissions, radiations, or inductions upon reception in a radio communication system manifested by any performance degradation, misinterpretation, or loss of information which could be extracted in the absence of such unwanted energy. The effects of the interference can range from mild disruption or delays in data throughout to a complete loss of service (Cisa, 2020). On the other hand, Radio frequency refers to the range of electromagnetic frequencies used to transmit information wirelessly, typically in the range of 3 kHz to 300 GHz (A.R.Thompson, 2017).

Frequency interruptions occur when two or more radio stations transmit on the same frequency, resulting in poor audio quality or complete signal loss. The causes of frequency interruptions in Kenya are varied and complex, but they can be broadly categorised as technical and regulatory issues (CISA, 2020).

One of the technical issues that lead to frequency interruptions is the lack of frequency coordination. Frequency coordination is the process of assigning frequencies to radio stations to ensure that they do not interfere with each other. However, the process is often flawed, with some radio stations being assigned frequencies that are already in use or using frequencies outside their assigned range. Additionally, some radio stations use equipment that is not properly calibrated or maintained, leading to signal leakage and interference. (Baan, 2001).

Radio frequency technology has revolutionised the way people communicate and interact with technology, making it an essential component of modern society. The importance of Radio frequency lies in its ability to transmit information wirelessly over long distance without the need for physical cables or wires. This makes it an essential component of modern communication, enabling devices to communicate with each other over a range of distances, from short-range wireless networks like Bluetooth and Wi-Fi to long range communication systems like satellite communications (CISA, 2020).

Radio frequency is also important in a range of other applications, including medical imaging, remote sensing, and radar systems. They can also be used to detect and analyse objects and environments, making them useful in applications like weather forecasting, air traffic control, and military surveillance (CISA, 2020).

Studies have found that Radio frequency interruptions have several negative effects on radio broadcasts. These effects include: It can cause a complete loss of radio signal, resulting in silence or static on the radio. This can be particularly frustrating for the listeners who are expecting to hear a specific program or information (A. Richard Thompson, 2017).

Interruptions can also cause distortion to the radio signal, resulting in poor audio quality. This can make it difficult for listeners to understand what is being said. This can also lead to a loss of revenue for radio stations and affect the credibility of the industry. When listeners experience poor audio quality or signal loss, they question the reliability of the information provided by radio stations, leading to loss of trust in the industry (A. Richard Thompson, 2017).

CHAPTER THREE

3.0 PURPOSE AND OBJECTIVES OF THE STUDY

3.1 Purpose of the study

The purpose of the study was to determine the main cause of frequency interference and the challenges they pose the station and listeners. This problem had been observed in various qualitative reports by our media analysts while monitoring radio stations during the election campaign period. It was therefore important to understand the genesis of the problem from a controlled environment.

3.2 Objectives of the study

- I. To identify the cause of the interruption.
- II. To check the impact of interruptions on the affected stations.
- III. To identify the times when interruptions occurred.

3.3 Research questions

- I. Was the radio station's frequency free of interference?
- II. How long was the frequency interference?
- III. What were the remedies offered by the affected stations?

3.4 Scope of the study

The study was conducted via an online link on Google forms, between January 19 and February 7, 2023. Media Analysts were instructed to probe further where a frequency was found to be problematic, by getting feedback from senior staff of the affected radio station and feedback was uploaded to the Google Form.

3.5 Limitations of the study

- I. Time consuming.
- II. Little resources to reach the wide scope.
- III. Reaching the targeted audience proved futile.

CHAPTER FOUR

4.0 ANALYSIS OF FREQUENCIES REPORT

4.1 Time of Monitoring

An analysis of the times of the day in which monitoring sessions were carried out is given in Chart 1.

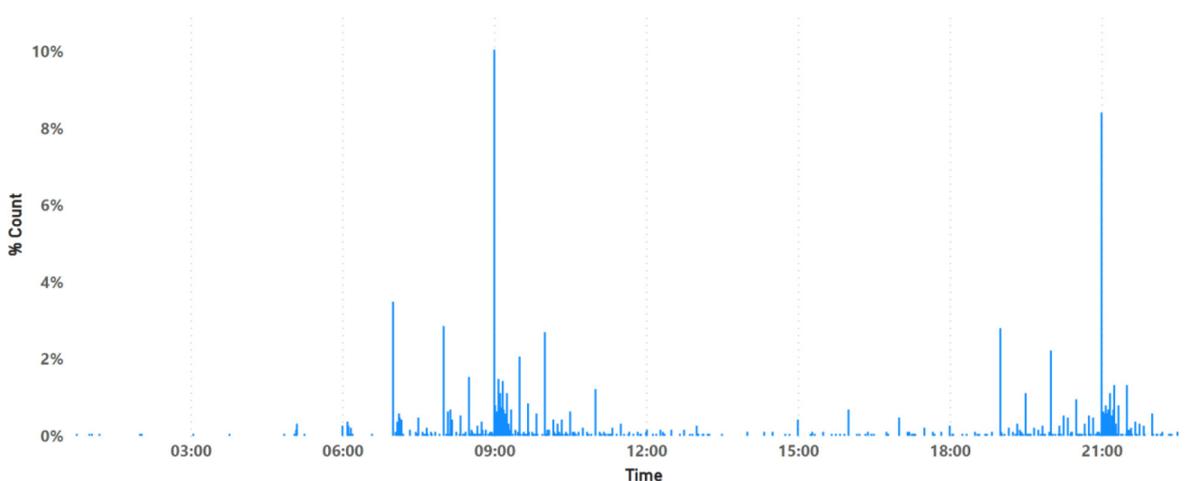


Chart 1: Monitoring periods

As presented in Chart 1, most monitoring sessions were carried out between 6 am and noon, with a peak around 9 am and later in the day between 6 pm and 10 pm.

4.2 Duration of monitoring

33.67% of the monitoring sessions were carried out for a duration of 0-5 minutes . 33.56% of the monitoring sessions were carried out for 10-15 minutes, 24.92% of them were carried out for 5-10 minutes, 2.17% were carried out for an hour, 1.59% of the monitoring instances were carried out for 30 minutes while 4.08% of them were carried out for other time periods.

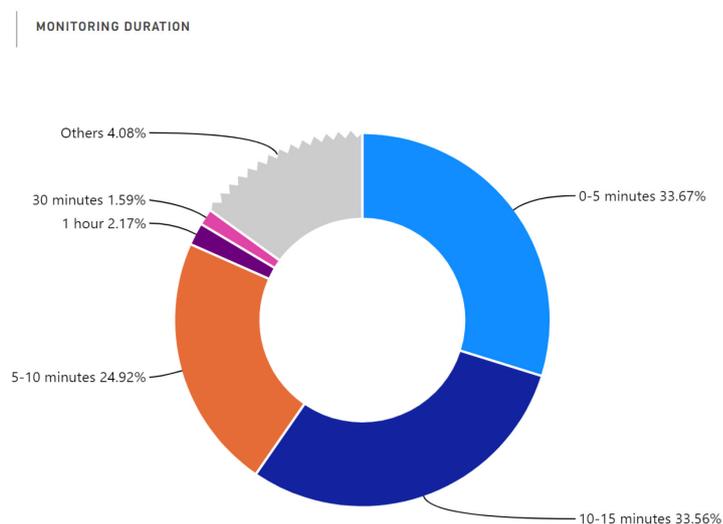


Chart 2: Monitoring Duration

4.3 Was the radio station's frequency free of interference?

The responses to this survey question have been summarized in Chart 3.

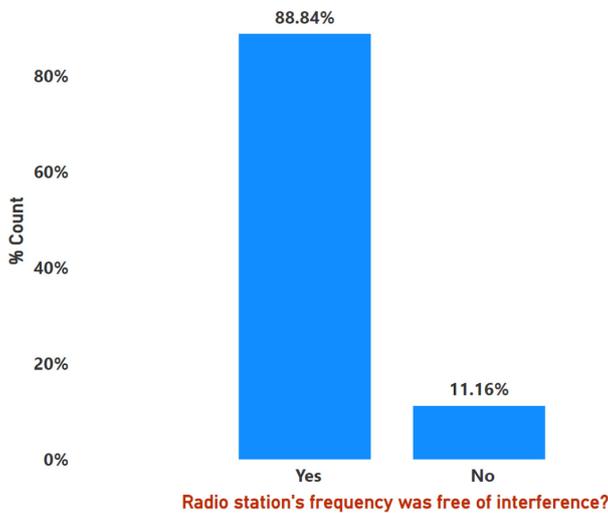


Chart 3: Radio station's frequency interference status

88.84% of the monitoring sessions indicated that Radio stations did not experience interference with the frequencies while 11.16% indicated that there was interference during the study period.

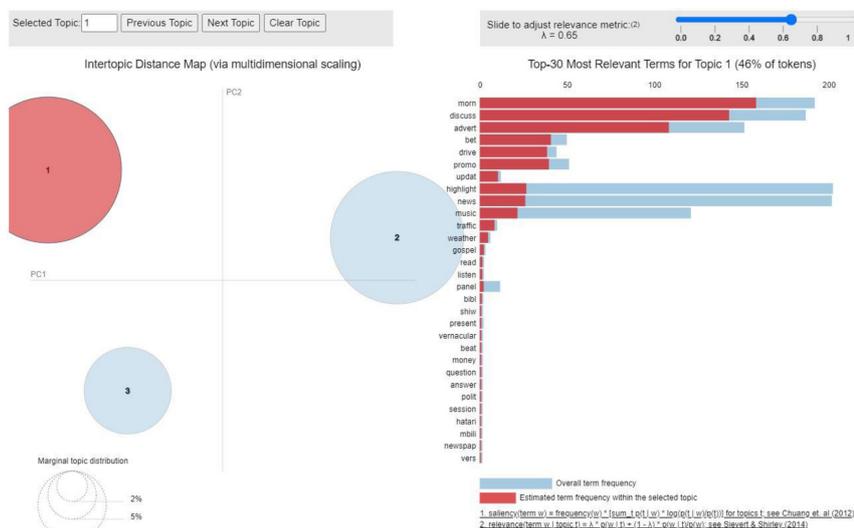
Those who indicated there was no frequency interference during the study period were further asked to provide information on:

- ✓ Content monitored as evidence of successful listening in the morning hours.
- ✓ Content monitored as evidence of successful listening in the evening hours.

Natural Language Processing (NLP) and Natural Language Understanding (NLU) techniques were adopted to thematise and quantify the responses herein through unsupervised learning Topic Modelling using the Latent Dirichlet Allocation (LDA) model.

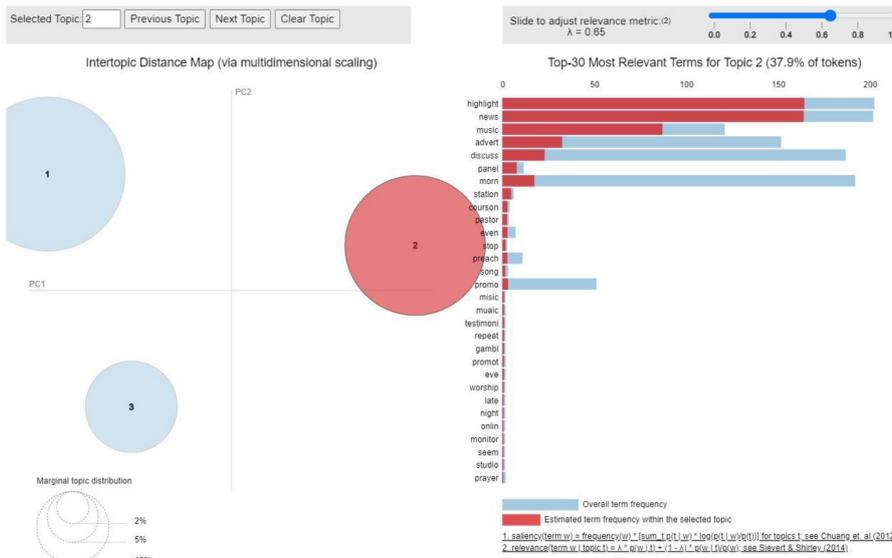
4.4 Content monitored as evidence of successful listening in the morning hours.

In this section, three key categories are identified as the content monitored as evidence of successful listening in the morning hours.



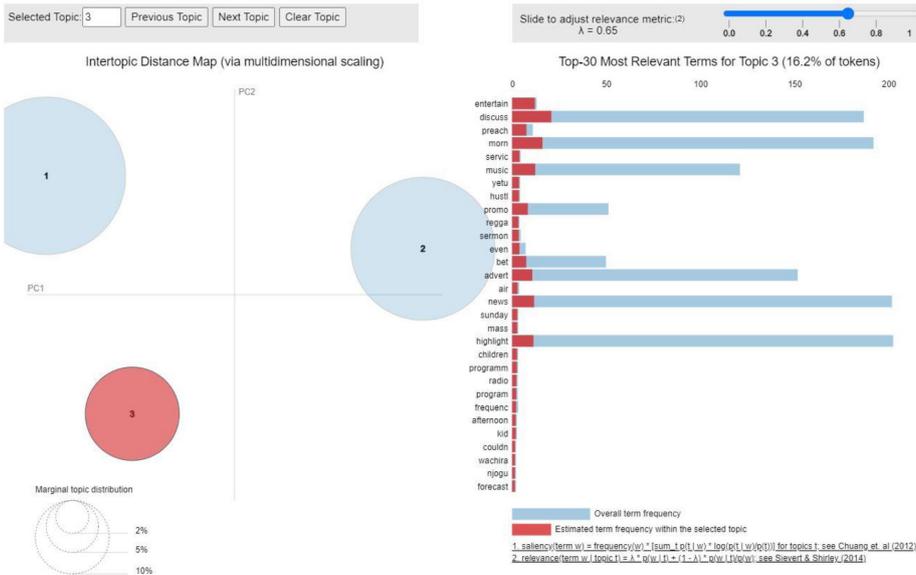
Category 1: A majority totalling to 46% of the data indicated that the following was the content monitored as evidence of successful listening in the morning hours.

- ✓ Morning panel discussions
- ✓ Advertisements
- ✓ Betting campaigns
- ✓ Promotions on specific goods/services



Category 2: Additionally, 37.9% of the data indicated that the following was the content monitored as evidence of successful listening in the morning hours.

- ✓ News highlights
- ✓ Music
- ✓ Advertisements before and/or after News

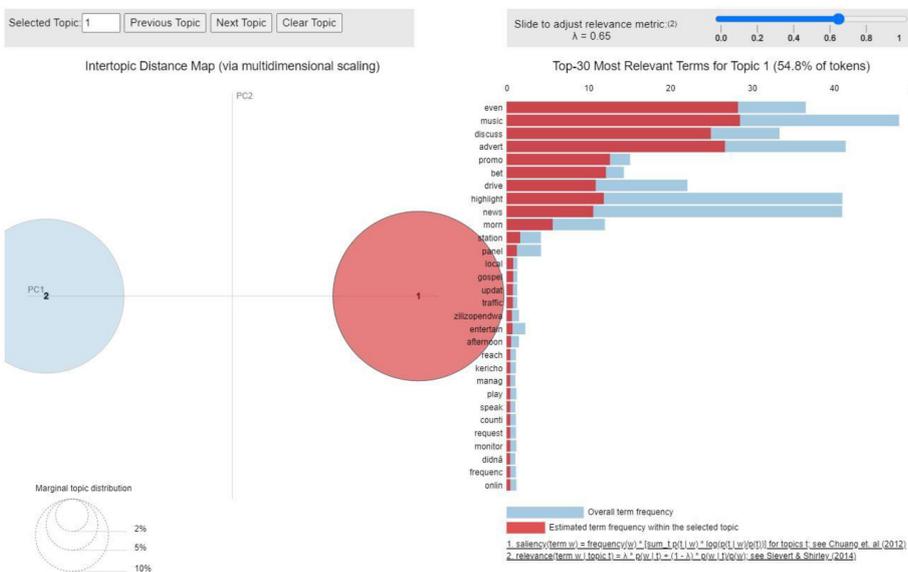


Category 3: 16.2% of the data indicated that the following was the content monitored as evidence of successful listening in the morning hours.

- ✓ Entertainment
- ✓ Morning discussions
- ✓ Preaching
- ✓ Morning church services
- ✓ Music

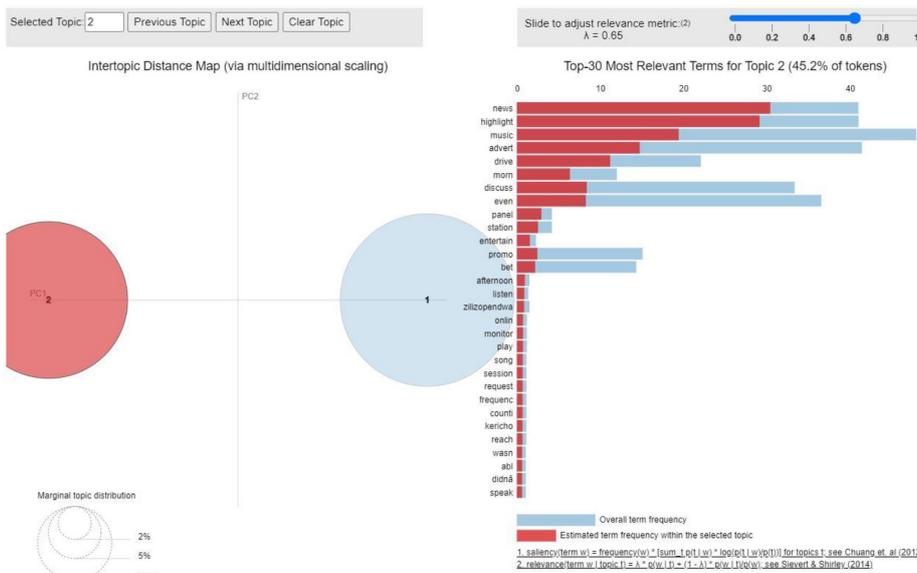
4.5 Content monitored as evidence of successful listening in the evening hours:

In this section, two key categories are identified as the content monitored as evidence of successful listening in the evening hours.



Category 4: 45.2% of the data indicated that the following was the content monitored as evidence of successful listening in the evening hours.

- ✓ Evening discussions
- ✓ Music
- ✓ Advertisements
- ✓ Betting campaigns
- ✓ Promotions of specific goods/services



Category 5: More than half, 54.8% of the data indicated that the following was the content monitored as evidence of successful listening in the evening hours.

- ✓ News highlights
- ✓ Music
- ✓ Advertisements
- ✓ Drive time shows.
- ✓ Repeat of morning panel discussions
- ✓ Evening panel discussions

Those who indicated there was frequency interference during the study period were further asked to provide information on:

- ✓ Duration of frequency interferences.
- ✓ State/rationale behind the frequency interference monitored in the morning hours.
- ✓ State/rationale behind the frequency interference monitored in the evening hours.
- ✓ Remedies to the frequency situations offered by the radio station.

4.6 Duration of frequency interference

The analysis to this survey question is presented in Chart 4.

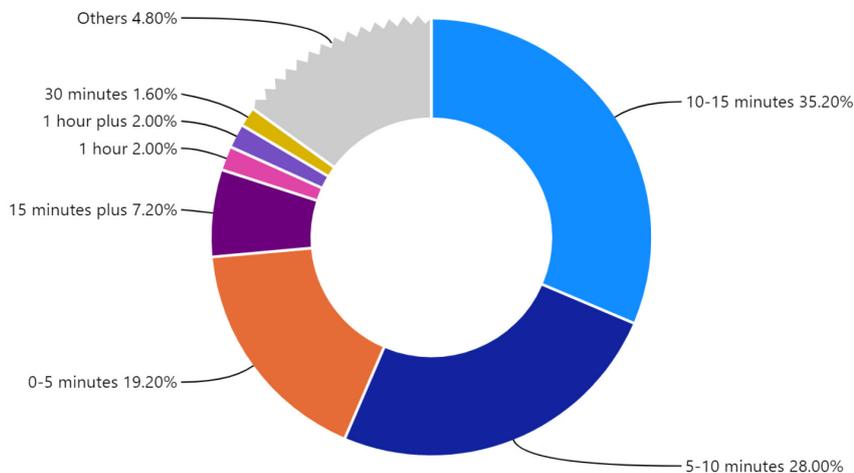


Chart 4: Duration of frequency interference

35.20% of the monitoring sessions indicated that the duration of frequency interference during the study period was experienced between 10-15 minutes. This was followed by 28.0% of the sessions ranging from 5-10 minutes, 19.2% from 0-5 minutes, while 7.20% indicated 15 minutes, 2.0% happened in within an hour and another 2.0% within an hour plus, 1.60% within 30 minutes while 4.80% of the sessions indicated that the duration was other time periods which individually accounted for less than 1.0%.

4.7 State/rationale behind the frequency interference monitored in the morning hours.

The responses to this variable are summarised in Chart 5 below.

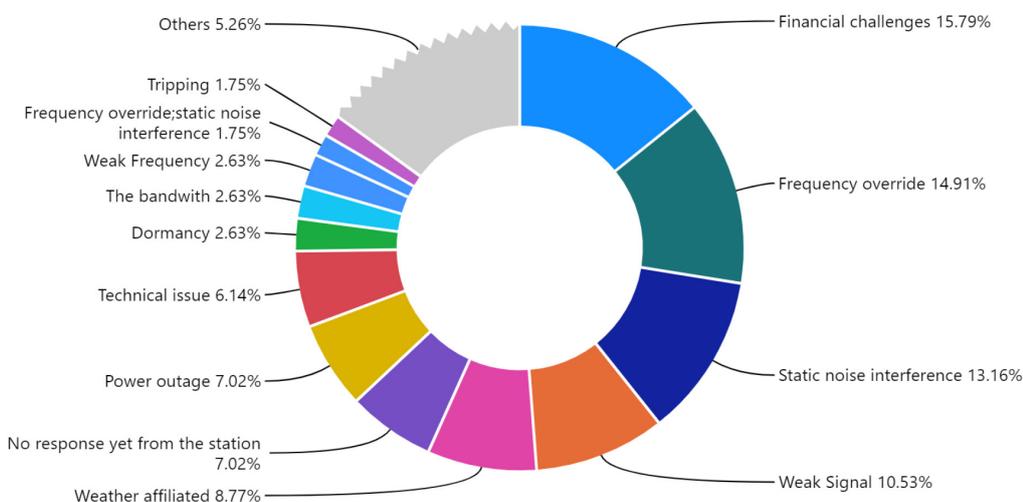


Chart 5: State/rationale behind the frequency interference – Morning hours.

As presented in Chart 5, 15.79% of the monitoring sessions indicated that financial challenges at the time of the study were behind the frequency interference in the morning hours, 14.91% of the monitoring sessions indicated frequency override, 13.16% of the data indicated that static noise interference was the rationale behind frequency interference, 10.53% of the sessions indicated weak signal as the reason, 8.77% of the sessions indicated weather affiliated reasons, 7.02% of the monitoring sessions indicated that the monitors did not receive any response from the radio stations after contacting them, another 7.02% of the sessions pointed to power outages as the state behind the frequency interference, 6.14% indicated technical issues, 2.63% indicated the dormancy state of the station as the reason behind the frequency interference, another 2.63% reported the bandwidth, a further 2.63% reported weak frequency, 1.75% reported a combination of frequency override and static noise interference, 1.75% reported tripping while 5.26% reported other reasons which individually contributed less than 1% to frequency interference in the morning hours.

4.8 State/rationale behind the frequency interference monitored in the evening hours.

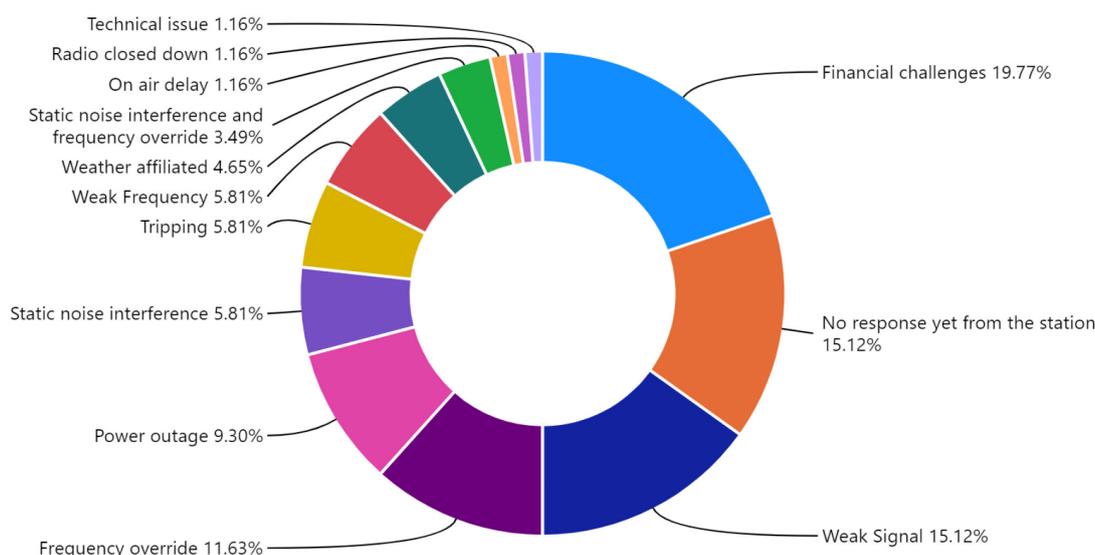


Chart 6: State/rationale behind the frequency interference – Evening hours.

As summarized in Chart 6, majority, 19.77% of the monitoring sessions indicated that financial challenges at the time of the study were behind the frequency interference in the evening hours, 15.12% of the monitoring sessions indicated that the monitors did not receive any response from the radio stations upon contacting them, 15.12% of the sessions indicated that weak signal was the rationale behind frequency interference, 11.63% of the sessions indicated frequency override as the reason, 9.30% of the sessions indicated power outages, 5.81% of the monitoring sessions indicated static noise interference, another 5.81% of the sessions pointed tripping, a further 5.81% indicated weak frequency, 4.65% indicated weather related reasons, 3.49% reported a combination of frequency override and static noise interference, 1.16% reported on-air delay, another 1.16% reported that the radio station had closed down while a further 1.16% of the monitoring sessions pointed to technical issues as the reasons why there was frequency interference in the evening hours.

Furthermore, the study sought to establish whether there were any remedies to the frequency situations offered by the radio station. The responses are summarised in Chart 7.

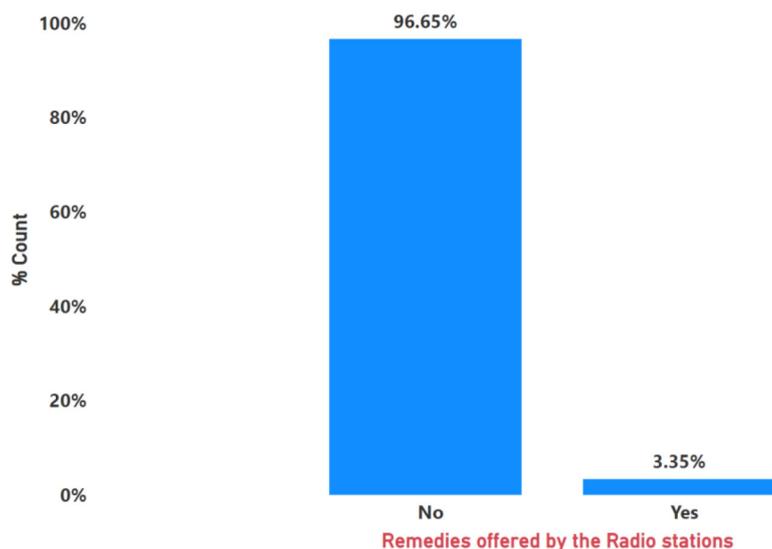


Chart 7: Remedies offered by the Radio stations.

As presented in Chart 7, 96.65% of the monitoring sessions indicated that there were no remedies offered among those stations that had frequencies interference while 3.35% of the sessions indicated that there were remedies offered among those stations that had frequencies interference during the study period.

4.9 List of stations monitored.

Mbaitu FM	Ene FM
Ene FM	Mwariam
Classic 105	Weru FM
Radio Umoja	Pamoja FM
Emoo FM	Hope FM
Athiani FM.	MBCI radi
Kiss FM	Pearl Radi
Taach FM	GGV FM
KBC Radio	Sound Cit
Chamgei FM	Tuliza FM
Radio Amani	Gukena FI
Ingo FM	Sauti ya M
Meru FM	Mwenge F
HOT 96	Star FM
Inooro FM	Muuga FM
Hope FM	Ghetto Ra
Kameme FM	Radio Citi:
Radio Waumini	Gitugi FM
Egesa FM	Radio Ran
Athiani FM	Pwani FM
Vybez Radio	Radio Yeti
Koch FM	Pamoja FM
Coro FM	ATG Radic
Radio Maisha	Radio Jam
Mwenge FM	Minto FM
Wega FM	Anguo FM
KU-radio.	MO Radio
87.7FM	Homeboy
Choice radio.	

5.0 CONCLUSION

The issue of problematic frequencies is not new in Kenya. It affects all types of radio stations regardless of their reach. General monitoring experience has shown that very few national radio stations are accessible across the country as required by regulation. They disappear as one crosses hills, mountains, and valleys leaving audiences wondering whether these stations are fulfilling the service they were established for. As a matter of fact, based on continuous observation and monitoring, most so-called national stations are only accessible in major towns, cities, and their environs, and not beyond – among villagers whose affinity for radio content is higher than urban dwellers. This begs the question as to whether the authority responsible for allocation and licensing of frequencies should review, thus punish those unable to meet policy requirements.

The findings herein confirm the existence of frequency interference and overlaps, which by extension can affect the quality of listenership and effective delivery of media content. Besides, while its impact on the credibility of the industry was not interrogated, frequency interference can upset the position of a radio station among its audience.

However, this report does not interrogate the impact of convergence, where, while a radio station ceased on the ordinary frequency, it broadcasts on other channels like Facebook or on its website. The report provides an opportunity for further extensive probing to establish the extent of frequency interference, what has been done to correct the problem and the impact of the interference on the audiences.

Send us your feedback to media.analysis@mediacouncil.or.ke

An interactive MS Power BI dashboard was developed to facilitate real-time interaction with the analytics and further querying for deeper insights.

Link to MS Power BI

<https://app.powerbi.com/view?r=eyJrIjoiZTI5MzI5OTAtNTgxZS00NGMlLWE1YTQtNmNlOWRlNjg5MWRjIiwid-CI6Ijk4NTY4NmI0LWY3YTAtNDQwMC05ZGY0LTZhMjQxMmVhN2Y0MSJ9>



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