

## **Appraisal of Digital Voice Performance of Radio, T.V. and Cinema Affecting on Hearing Perceptions of the Recipient Ear**

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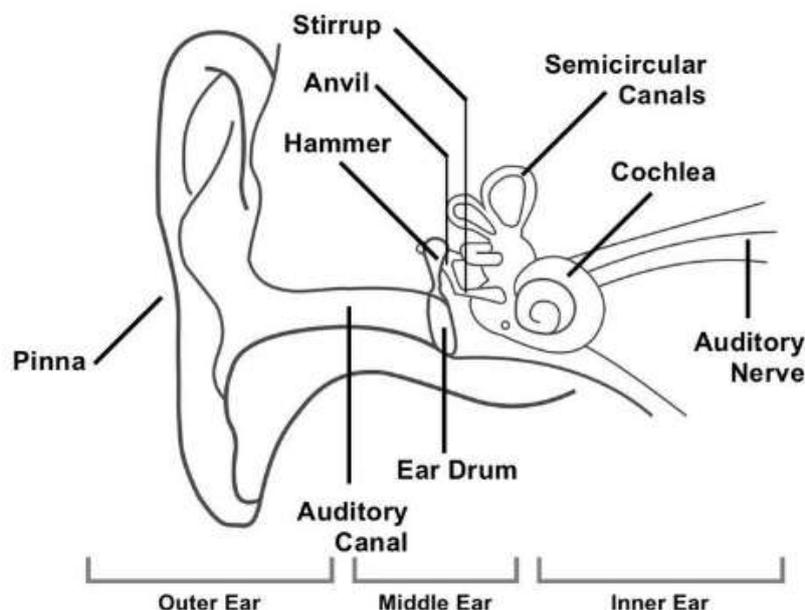
**Abstract.** The hearing perception of the human ear is an intellectual and cultural tools and one of the main points in the artistic production of radio, television and cinema. This study will try to shed light on the voice from a technical and aesthetic point of view to show what are the intended benefits of it to be a good certain for the human ear during hearing. 54 samples of scientific questionnaires were collected and randomly chosen based on the gender, age of the person, as well as whether the person is of specialty or outside of specialization. All data will be analyzed using these three important characteristics. In addition, the data were evaluated on the basis of dividing the questionnaire into two main parts: the first concerned with technical matters and the second concerned with the aesthetic matters of vocal performance. The results varied between "very satisfied", "satisfied" and "acceptance". It indicated that the highest percentage in the technical part of the sound effect was 57% for people who are enthusiastic about the high-purity sound to follow up on the rest of the subsequent events while the highest aesthetic aspect is 56% for those who deepen the melodious or stereophonic sound on the expression of the scene and the movement in the artistic and advertising works.

### **1. Introduction, Review, and Theoretical Background**

Voice is one of the important means of communication between humans, and it relies on the person for speech, conversation, opinion and expression of precious feelings. The human hearing device has the ability to create a mental image, so the radio and dramatic programs sent on radio depend on sound only without the picture, and the radio has become an independent means of communication, while the cinema or television could not be satisfied with the image only, even during the era of silent cinema. Soundtracks and sound effects, sometimes the commentator explains what the screen offers to viewers, as was the case in Asia and Africa, instead of translating and writing dialogue. But what is the meaning of sound, its impact, nature, and how it can be used in cinema both technologically and also dramatically in documentary and narrative [1, 2].

As related to [2], voice is a group of complex vibrations and these vibrations are the result of changes that occur in atmospheric pressure, starting from the source of the sound until what is called slavery or the eardrum. When a person speaks (or plays his musical instrument), the amount of air adjacent to the mouth or sound source vibrates a some of vibrations that cause a change in air pressure which is then transmitted (through compression and dislocation) to the location of receiving these vibrations, whether it is the microphone of the recorder or the listener's ear. After talking about the human ear and the number of vibrations that the ear can recognize and feel, as well as the intensity of the sound, any strength or weakness of these vibrations. But how to identify these sounds (vibrations) using the ear.

The ear consists of three main parts, the outer ear, the middle ear, and the inner ear as shown in Fig.1.



**Figure 1.** The components of the human ear. [3]

The outer ear consists of the ear flap that collects sound waves and enters them into the auditory canal until they reach the eardrum. This drum is a very thin film that can vibrate by these sound waves coming through the auditory canal. When this drum vibrates, the three bones behind it (the middle ear) are also vibrated. These bones are the hammer, the anvil and the stirrup, a mechanical vibration, which causes these vibrations to affect the ends of the auditory nerves in the inner ear and inside the auditory cochlea in the middle ear. When a person gets a cold and the temperature rises, we find that he cannot have a good hearing, because the three bones in the middle ear are affected by temperature, so the transmission of sound waves from the external ear to the interior, that is to the auditory nerves, is affected. These auditory nerves are very thin capillaries, each of which is affected by a specific vibration and delivers them to the center of the sensation in the brain in order to identify them and act based on what these sound waves carry from signals indicating the sound heard by the ear [2].

The human ear was the first inspiration for the first audio recorders, which were invented in 1857 by Édouard-Léon Scott de Martinville, and this instrument was called phonograph. The ear was represented by a trumpet that takes the air down to a thin piece of parchment-like paper as happens in the eardrum. The paper swings when vibrating air collides with it, but in the phonograph the movement of the paper is transferred to a needle attached to it and then to a piece of paper recording the drawings that caused by the needle, every step in this process is a physical transfer of vibration from one piece of paper to another and so the end result is a curve that shows the changes in air pressure caused by the original sound, the fact that the graphics can contain enough information to reshape the recorded sound that did not happen with de Martinville or his colleagues. The feature of frequent listening appeared in the 1870s, when French inventor Charles Cros invented the idea of transferring phonograph records and placing them on disk [4].

Digital voice is recording using encoded pulsed modulation and digital signals. These systems include digital analog switching and analog digital switching, digital storage and processing and broadcast components. The main benefit of digital audio is the storage, retrieval and transmission of signals without any degradation in sound quality. Digital sound has emerged because of its benefits in recording, processing, quantitative production and distribution of audio materials. In conventional analog sound systems, sounds start in their natural waveform in the air, then convert to an electrical representation of their previous waveforms using a switch such as a microphone, and then store or transmit. In order to reproduce the sounds from them, this process is done in reverse using amplification, and converted to its form as sound waves using the amplifier. Although the nature of the analog sound may change, its general wave properties remain the same during storage, transfer,



the director an artistic field Fertile to create powerful suggestive symbolic methods. And it is easy to achieve good and clear sound when the sound is the only element that occupies us, as is the case with radio broadcasts, In radio studios, where we do not see what happens with them during broadcasting or during recording, it is possible to use large-sized microphones. The studio can also be prepared with sound barriers that help to record the sound at its best this is for audio broadcasting. In sum, what added the sound to the image is: (Realism, eloquence of expression, brevity, and silence has become a dramatic value) [8].

Each of the media's ability to persuade and influence behavior varies depending on these methods and the type of audience they are directed to, radio is a powerful means of communication that can reach various individuals and societies. Therefore, radio was considered the fastest means of publication, as it surpassed the press and television. The radio is also characterized by its use of various ways to influence emotion, which is the sound and musical effects, which gives the listener a feeling of participation, and its effect is closer to the personal impact [9].

Since audible radio relies solely on the sense of hearing for the transmission of its informational messages, it is provided illustrative pictures complementing situations and events. Rather, these images suggest to the listener, this suggestion and excites his imagination to the utmost degree, so how can the message go to the destination that he likes and the appropriate way for his unconscious motivations, expectations and desires. Therefore, radio is an important source of culture, awareness creation, unification of concepts, and exchange of scientific, cultural and literary information [10].

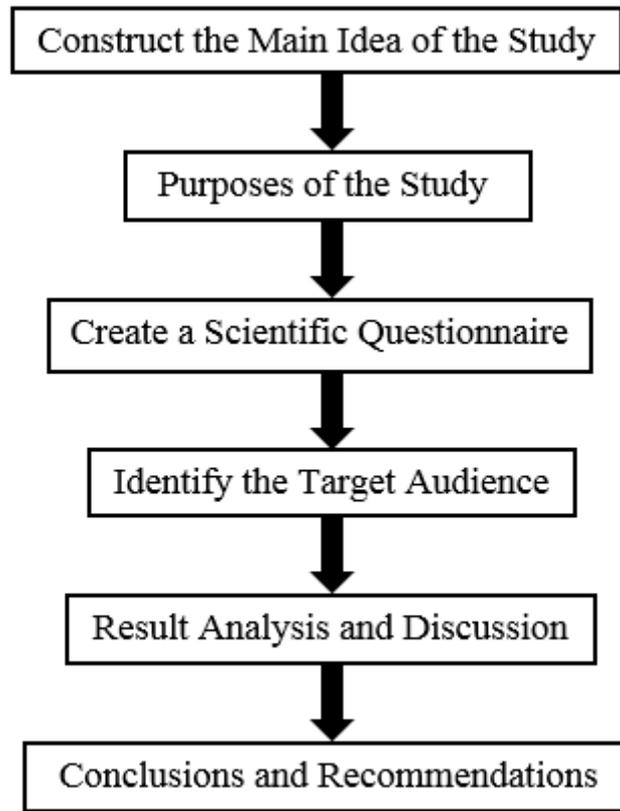
Digital broadcasting is more efficient than analog communication, which makes it able to provide space for a huge number of channels while the latter only gives you a very limited number. Digital broadcasting provides you with clearer pictures, more pure sound, quality in addition to more options, cinematic style and the new era gives the viewer and listener the most interaction with broadcasting stations and channels, all via remote control [11].

The broadcast of public service has evolved over time. But the emergence of new technology and better services is the main reason behind changes in the listener's patterns as the listener can now follow many different things at once and the idea of anyone about entertainment today is likely to differ from that of another person. It is not only television that has benefited from digital technology, radio broadcasts are currently being offered for the listener in a completely different tone than was previously the case, the sound quality is crystal clear and clear from any interference, the new digital radios will be viewed by the follower on his display and data and numbers associated with the programs you listen to [12,13].

### **3. Methodology and Data Collection**

#### *3.1. Methodology*

The procedure steps of the study methodology are illustrated in diagram as shown in Figure 2.



**Figure 2.** The Procedure of Study Methodology.

*3.2. Data Collection*

54 samples of scientific questionnaires were collected shown in Appendix A, Table A1. All samples were randomly chosen based on the gender, age of the person, as well as whether the person is of specialty or outside of specialization as shown in Table 3 and presented in figures 3, 4 and 5.

**Table 3.** The Percentage of Samples According to Age, Gender and Specialization.

Details	Age					
	15	20	25	30	35	40
<b>From</b>	<b>15</b>	<b>20</b>	<b>25</b>	<b>30</b>	<b>35</b>	<b>40</b>
<b>To</b>	<b>20</b>	<b>25</b>	<b>30</b>	<b>35</b>	<b>40</b>	<b>50 / +</b>
<b>No. of Samples</b>	20	8	12	3	5	6
<b>Total</b>	54					
<b>Ratio (%)</b>	37.04	14.81	22.22	5.56	9.26	11.11
Gender	Male			Female		
<b>No. of Samples</b>	36			18		
<b>Total</b>	54					
<b>Ratio (%)</b>	66.67			33.33		
Specialization	Within the specialty			Not in the specialty		
<b>No. of Samples</b>	36			18		
<b>Total</b>	54					
<b>Ratio (%)</b>	66.67			33.33		

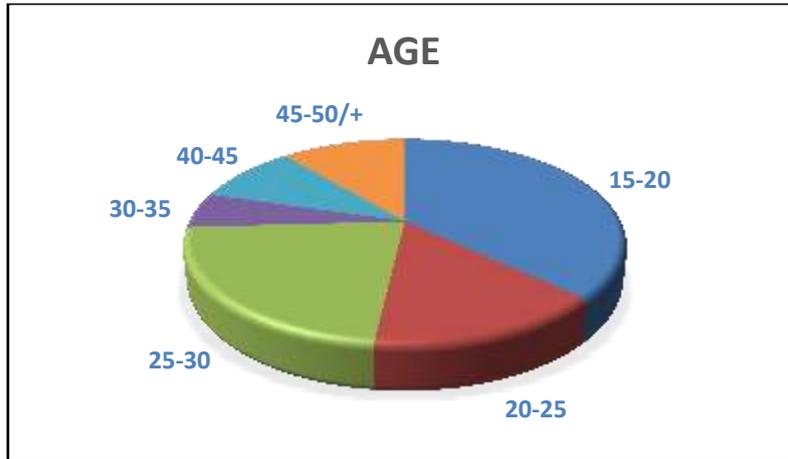


Figure 3. The Percentage of Samples According to Age.

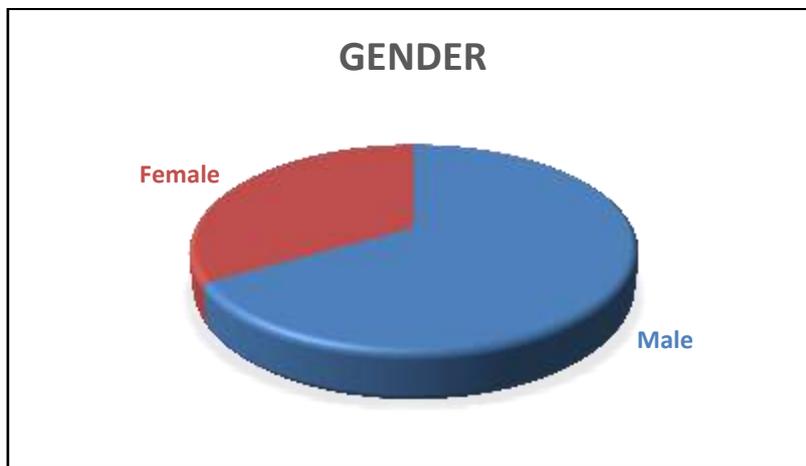


Figure 4. The Percentage of Samples According to Gender.

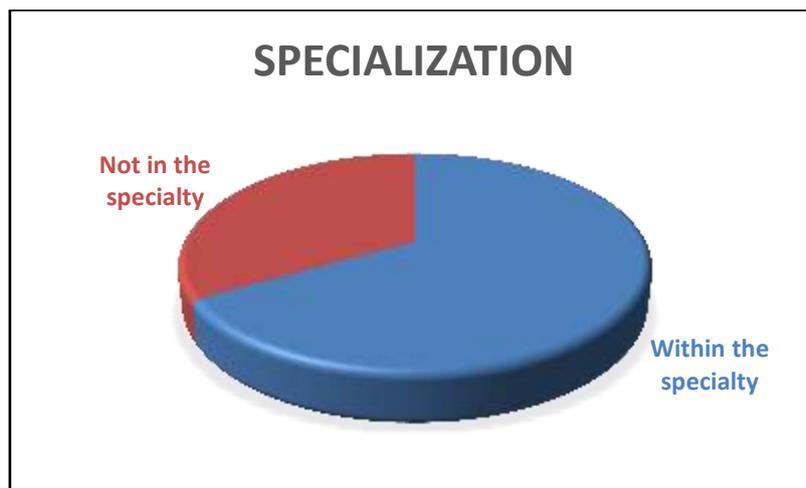


Figure 5. The Percentage of Samples According to Specialization.

Through the previous figures, the data indicate that the evaluation of the voice performance on the awareness of the human ear was adopted by the opinion of the majority in terms of age, gender and specialization. The results of data collection showed that the 37.04%, 66.67%, and 66.67% are in the 15-20 age group, males and within the scope of the specialties respectively.

All data will be analyzed using these three important characteristics. In addition, the data were evaluated on the basis of dividing the questionnaire into two main parts: the first concerned with

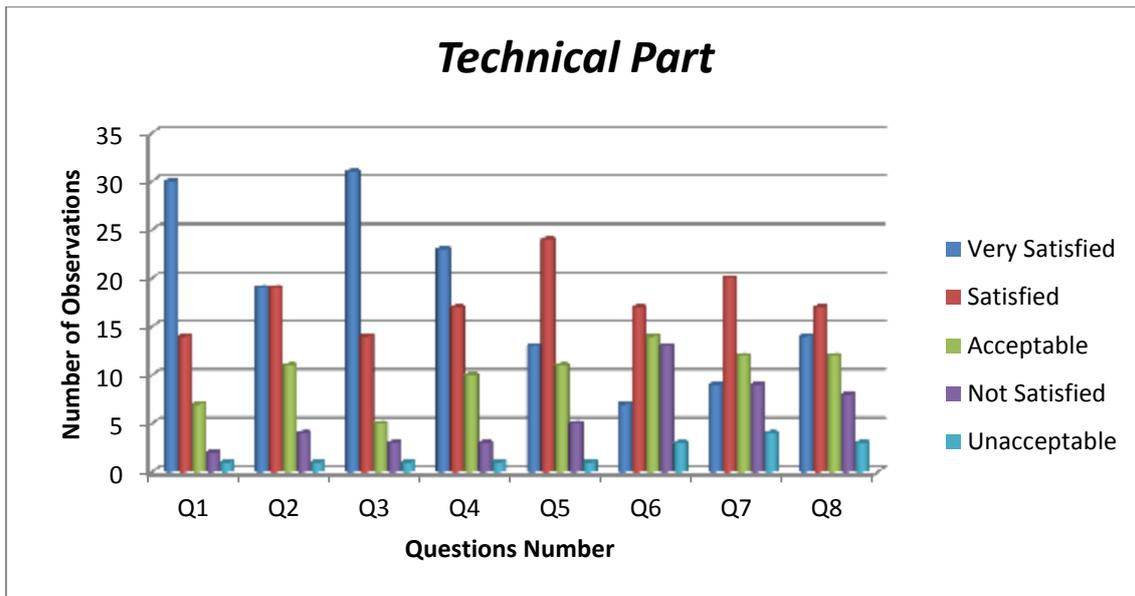
technical matters and the second concerned with the aesthetic matters of vocal performance and its effect on the human ear.

**5. Analysis and Discussion of Data**

Data excel sheet is used for analysing the collected data of the scientific questionnaires. as presented in Table 4 and shown in Figure 6, from the technical side of the questionnaire, the results showed that 56% of the observations agree very satisfied and closely with those who are interested in the purity of the sound that they hears, and 35% of them give priority to the acquisition of international brands that give true clarity to the voice with regard to the human ear. Likewise, 57% of them give the importance of sound purity to complete the rest of the events they hears, and 43% of them give attention to sound accuracy and influence the mood of the listener. Above ratios indicate the points 1 to 4, respectively.

**Table 4.** Assessment the Larger Ratio of Each Question as Related to the Number of Observations.

<b>Technical Part</b>							
Series of the Question	Very Satisfied	Satisfied	Acceptable	Not Satisfied	Unacceptable	The Larger Ratio	Result
1	30	14	7	2	1	56%	Very Satisfied
2	19	19	11	4	1	35%	Very Satisfied
3	31	14	5	3	1	57%	Very Satisfied
4	23	17	10	3	1	43%	Very Satisfied
5	13	24	11	5	1	44%	Satisfied
6	7	17	14	13	3	31%	Satisfied
7	9	20	12	9	4	37%	Satisfied
8	14	17	12	8	3	31%	Satisfied
<b>Aesthetic Part</b>							
9	30	15	6	1	2	56%	Very Satisfied
10	24	23	6	0	1	44%	Very Satisfied
11	11	27	6	7	3	50%	Satisfied
12	23	15	7	3	6	43%	Very Satisfied
13	5	12	18	13	6	33%	Acceptable
14	16	16	10	6	6	30%	Very Satisfied
15	28	21	3	0	1	52%	Very Satisfied
16	10	16	14	10	4	30%	Satisfied



**Figure 6.** Number of Observations for each Question of Technical Part.

In addition to what was mentioned previously in relation to the technical aspect of the questionnaire, it was also noted that 44% of the observations are satisfied in the way of work or how the technical way in which the digital sound are formed from analog sound, and that 31% when listening to music, they can know the number of musical instruments and distinguish between one and another. Likewise, 37% can determine the sound sources and their surrounding directions while watching the cinematography, in addition to 31% of them knowing that digital audio has the ability to delete and add to any sound stream with ease. The above ratios refer to points 5 to 8, respectively.

On the aesthetic side, as presented in the Table 4 and shown in the Figure 7, according to the "very satisfied", 56% of observations support the melodic or stereophonic sound deepens the expression of the scene and the movement in the artistic and advertising works, while 44% of them confirm their enjoyment of the music or influences accompanying the dramatic events. Likewise, 43% can watch a movie or TV series while they are putting the "Mute" on during watching the movie, in addition to 52% of them who leave watching artwork in the event of a sound failure due to the youth class who are between 15-20 years old are those who do not have the patience to carry any influence, even though they are the dominant category in evaluating this study. Moreover, 30% of observations improve the auditory taste when they hear a high purity sound. All above ratios refer to points 9, 10, 12, 14 and 14 respectively.

On the other hand, 50% satisfied with raising stereophonic sounds and have mental image looking for images that have accumulated in their imaginations to accompany the audible sound as mentioned in point 11. Moreover, 30% of them leave the viewing of artworks in the event of sound interruption and others on the contrary do not content themselves with that. Enjoying through their TV headsets when watching TV programs, and even using some additional headphones for added enjoyment. All these percentages are indicated in points 14 and 16 of the questionnaire.

Finally, 33% of the observations indicate that the cinematic message or any artwork is understood by some when obscuring the sound throughout the period of the show, and this may conflict with the perception of perception of the link of the vision and hearing.

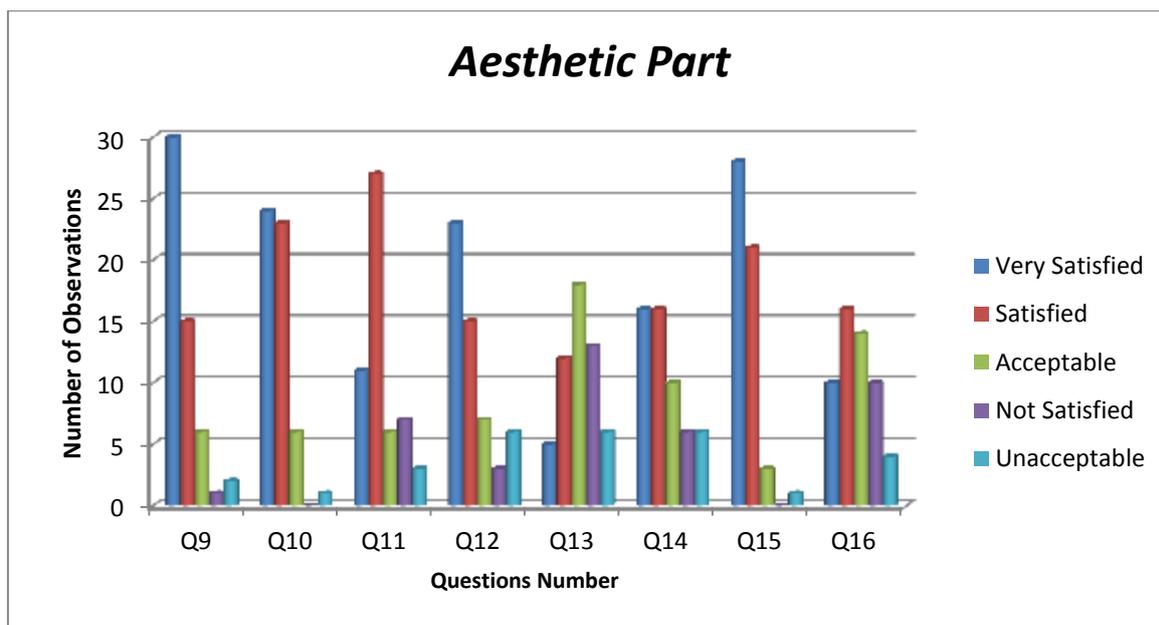


Figure 7. Number of Observations for each Question of Aesthetic Part.

**6. Conclusions**

In summary, after collecting and analyzing data according to the scientific questionnaire set based on the current study, the results varied between "very satisfied", "satisfied" and "acceptance", and there was no rejection of the extent of the effect of digital sound on the deep perception of the human ear. The results indicated that the highest percentage in the technical part of the sound effect was 57% for people who are enthusiastic about the high-purity sound to follow up on the rest of the subsequent events while the highest aesthetic aspect is 56% for those who deepen the melodious or stereophonic sound on the expression of the scene and the movement in the artistic and advertising works.

**7. Recommendations**

- Support the main technical and aesthetic aspects of the questionnaire that was built with another aspect that enhances the entire process.
- Knowing the extent of the effect of hearing perception of the human ear technically and comparing the results of the questionnaire with what is applied in practice through the use of cinematic or television screens or also radio broadcasts.

**8. Acknowledgment**

The authors gratitude Al-Farabi University College for supporting to accomplish this paper.

**9. Appendices**

9.1. Appendix A

**Scientific Questionnaire**

**Name (Optional):**

**Gender:**     Male     Female

**Age:**     15-20     20-25     25-30     35-40     40-45     50 or More

**Working area:**     Within the specialty     Outside the specialty

Hello Dears,

Firstly, we want to thank you for accepting the Questionnaire form. Researchers intend to conduct research entitled **(Appraisal of Digital Voice Performance of Radio, T.V. and Cinema Affecting on Hearing Perceptions of the Audience Ear)**.

In order to achieve the goal of research, in your hands a measure of the intensity and purity of television, radio and cinematic sound, given your experience and expertise in evaluating this research field and evaluating its goals. So researchers hope to cooperate with them.

**Thank you very much**

**Answer by (√) in the choice that agrees with your opinion, knowing that this information will be used for scientific research purpose only**

Se.	Details	Unacceptable	Not Satisfied	Acceptable	Satisfied	Very Satisfied
<b>Technical Part</b>						
1	Are you interested in the purity of sound that you hear, whether through the use of mobile phones or LCD screens?					
2	Do you prefer the acquisition of well-known brands of audio devices?					
3	Will the high-pitched sound excite you to follow the rest of the subsequent events?					
4	Does the accurate sound and the accompanying isolation methods affect your mood as a listener?					
5	Are you interested in the way it works or the technical part where the digital sound is mad and its difference from analog audio?					
6	When listening to music, can you know the number of musical instruments and do you distinguish one instrument from another?					
7	Can you identify the sound sources and directions surrounding you while watching the cinema?					

8	Did you know that digital audio has the ability to delete and add to any audio stream with ease?					
<i>Aesthetic Part</i>						
9	Does the melodious or stereophonic sound deepen the expression of the scene and the movement in the artistic and advertising works?					
10	Do you confirm that you enjoy the music or the effects associated with the dramatic events?					
11	Do stereoscopic sounds excite your mental image and are you looking for images that have accumulated in your mind to accompany the audible sound?					
12	Can you watch a movie or a TV series while you put the Mute on for the duration of the movie?					
13	Do you understand the cinematography message or any artwork when blocking sound throughout the show?					
14	Are you the one who leaves watching artwork in the event of a sound failure?					
15	Does your listening pleasure improve when you hear loud purity?					
16	Are you satisfied with enjoying your TV set's headphones while watching TV programs, or are you adding some additional headphones for addition of enjoyment?					

**Figure A1.** The Scientific questionnaire of the Current Study.

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