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An investigation on the acoustics of the existing halls used for music performance in Kosovo

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Abstract. Music performance of course needs special attention and special requirements. On the one hand musicians spend long time rehearsing for the performance and need the right conditions in order to have efficient rehearsal. On the other hand listeners of the music performance have their expectations as well, and require good conditions in order to enjoy the music performance properly. One aspect of these special conditions for a music performance is of course room acoustics. Since good room acoustics for music performance is not something easily achieved, usually there are specially designed halls for music performance in order to provide the right conditions including right room acoustics. In the absence of designed hall for music performance, Kosovo currently uses various theatres and other existing non-specific halls when a music performance is needed. The acoustic quality of the existing halls in use has been investigated through a questionnaire. Musicians who have performed in targeted halls were chosen for subjects in this subjective evaluation. Furthermore basic acoustic data for these halls are estimated using the diffuse field method. The paper compares and discusses the results of the subjective evaluation and the diffuse field method.

Keywords: Music performance, Existing halls, Room acoustics, Subjective evaluation, Online questionnaire.

1. Introduction

Good room acoustics conditions are required for the performance of music [1, 2]. This holds true both for the musicians who perform the music piece, as well as for the listeners who enjoy listening to it. Usually there are specially designed halls for music performance that provide right conditions for such a performance. In the absence of a specially designed hall for music performance, Kosovo currently uses various theatres and other existing general-use halls when a music performance is needed. This paper investigates the acoustic quality of some of these existing halls, with a subjective evaluation by musicians.

2. Approach

Three halls have been selected for the study. First hall is “Salla e Kuqe” (The Red Hall) is a rectangular multi-purpose hall quite often used for music performance (Fig. 1a). It has a volume of about 3000 m³.

Second is “Salla e Bibliotekes Kombetare Pjeter Bogdani” (The National Library Hall) which is actually a central hall in this library building (Fig. 1b). Its main shape covered with a dome has a volume of about 1000 m³, but it is open to other corridors and halls in the building, therefore the volume is bigger and not easily defined. Third hall in this study is “Salla e Bibliotekes Universitare UP” (University of Prishtina Library hall) which is a cylindrical shaped lecture auditorium with a volume of about 3770 m³ (Fig. 1c).



Fig. 1. View of the selected halls in the study: (a) “Salla e Kuqe”; (b) “Salla e Bibliotekes Kombetare Pjeter Bogdani”; (c) “Salla e Bibliotekes Universitare UP” (source: web).

To investigate the acoustic quality of these existing halls we have initiated a subjective evaluation study with an online questionnaire. The questionnaire asked participants to evaluate the quality of sound in the hall, in a six point descriptive rating scale, between the following qualities:

- | | | |
|---------------------|-----|-----------------------|
| • Pleasant | ... | Unpleasant |
| • Clear | ... | Unclear |
| • Diffuse | ... | Concentrated |
| • Dry | ... | Reverberant |
| • Treble emphasized | ... | Treble not emphasized |
| • Bass emphasized | ... | Bass not emphasized |

The questionnaire was conducted online. Musicians who have performed in the halls addressed in this study were chosen for subjects in this subjective evaluation. In total twenty (20) subjects have participated in the online questionnaire.

3. Results

The survey results in arithmetic average for all the subjects, for “Salla e Kuqe” (The Red Hall), “Salla e Bibliotekes Kombetare Pjeter Bogdani” (The National Library Hall) and “Salla e Bibliotekes Universitare UP” (University of Prishtina Library hall) are shown in Figures 2, 3 and 4 respectively.

The average results show that for all of the three halls investigated, the musicians have been somewhat neutral in evaluation between sound qualities in question, except the reverberance.

They have evaluated the halls as having slightly pleasant sound quality. slightly clear and slightly diffuse sound.

In terms of reverberance there is a bigger difference between the halls. “Salla e Kuqe” appears to be very dry according to the perception of the surveyed musicians. Whereas “Salla e Bibliotekes Kombetare Pjeter Bogdani” and “Salla e Bibliotekes Universitare UP” stand better in terms of reverberance.

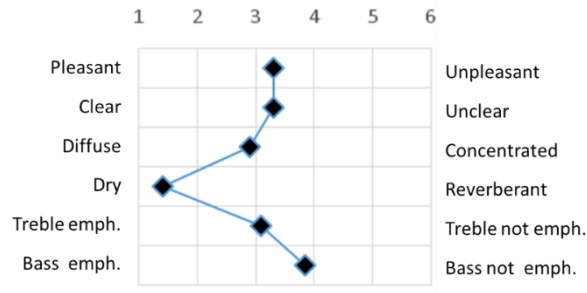


Fig. 2. Survey results for the "Salla e kuqe".

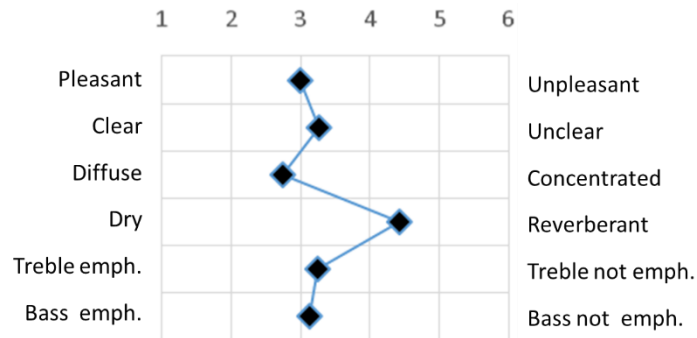


Fig. 3. Survey results for "National library Hall"

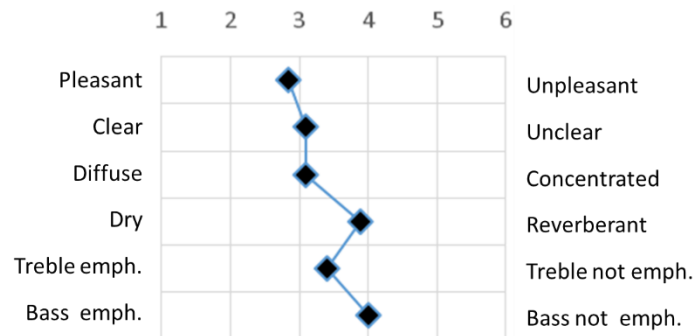


Fig. 4. Survey results for the University Library Hall

4. Conclusion

According to this psychoacoustic study existing halls used for music performance presented in this study do not satisfy requirements for good quality music performance according to the survey results of the study. "Salla e kuqe" which is quite often used for classical music performances in Prishtine, Kosovo, results to be very dry for music performance according to the survey.

As the next step of the study would be to perform objective measurements in the halls according to the standard ISO 3382-1:2009 [3] and to compare the objective measurement results with the questionnaire results.

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Performance spaces