Acoustic Performance of Live Music Café as Broadcasting Studio Concept at Shop Houses in Surabaya

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Abstract – The development of the business sector, cafe with live music performance in particular, is increasing in urban areas. In general, live music performance in the cafe was followed by a process of event recording, which then be broadcasted for marketing purposes. From this sequence of activities, arise the need of acoustic quality to meet the standard of acoustic comfort for cafe buildings. The selection of research subjects started by sampling a wide variety of cafe buildings in Surabaya, including the type of building, the volume and the ratio of the facade material. Field measurement depends with sampling data and existing circumstances. This paper is a preliminary study that focus to show the field studies. So the final result of this paper is the method and the results of field studies were applied in research workflow.

INTRODUCTION

The acoustic performance has been analyzed both inside and outside the building. Parameters for indoor acoustic performance are alpha materials that determined by reverberation time (RT60). In addition, the ideal reverberation time is also correlated with the application of acoustic material in the building (1). This material is divided into two categories, namely recycle material and non-recycle material. Comparison of the both material categories needed because of increasing demand of alternative acoustic material like recycled product (4), (5), (6). The indoor acoustic material needs the absorption for the 250-500 Hz and reflective materials for the 1000–4000 Hz. And the results of the frequency group are related with the comparative of both category room acoustic material configuration. The results for this are percentage of ability from each material category to reach the ideal RT60 value. It can be done with a acoustic quality approach of RT60 ideal per-frequency. Then for the outdoor building acoustic quality are sound pressure level that had an influence for the environment and material ratio for the facade. As for building facades to typical shop houses cafe building, insulation must be achieved at 10.67 - 13.67 dB. The final results of this study can also be used as guidance in the design of the cafe with the same typical function.

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METHOD

As mentioned earlier, this study is a preliminary study that includes methods and results of field study. Here are some of the problems identified in the field study that adapted to overall study variables.

Table 1. Research Variables

Variable	Indicator	Parameter
Environment Building Acoustic		
Independent variables	Type of facades material between massive and transparent	Area ratio of the material, STC per-material
Façade material configuration		
Dependent variable	SPL produced from the building	Transmission loss
Environment acoustic quality		
Room Acoustic		
Independent variables	Category and type of material	Surface area, alpha material
Configuration of acoustic material in the chamber wall surface		
Dependent variable	Reverberation time	RT 60
Room acoustic quality		

From the table above it can be drawn on the lines of inquiry as follows:

A. *Room Acoustic*

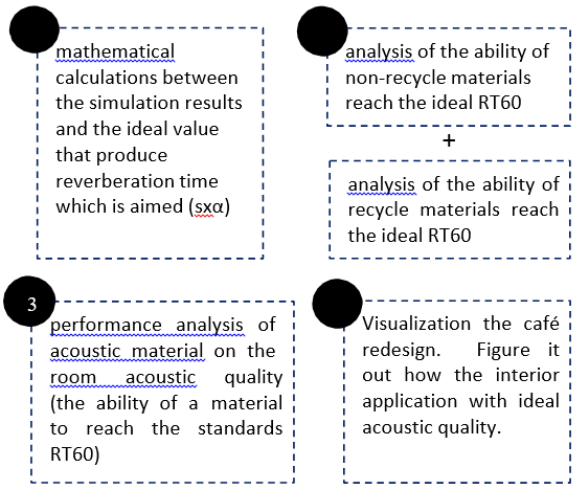

Figure 1. Room Acoustic Research Phase

Therefore when it connected from the research phase above, the field data that needed is a data of RT60 cafe (first phase). Because the study requires a generalized result, the RT60 cafe data collected with purposive sampling. Purposive sampling requires the activity and standard material that most applied in the

cafe building. So that data can be retrieved by sampling some of the buildings in accordance with the typical cafes issues raised (7).

B. Environment Bulding Acoustic

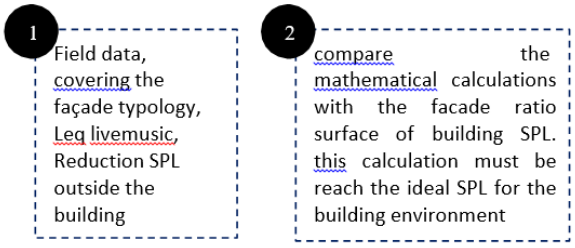

Figure 2. Café building acoustic environment research phase.

According to aforementioned data above, some field studies are required, namely the Leq value of live music in certain circumstances, and the distance of important spots which the damping value to be achieved.

RESULT AND DISCUSSION

From the explanation in previous section, the method and results of field research analysis is divided as follows:

A. Overall data sampling of some cafes in urban areas (Surabaya)

The samples were taken with purposive sampling method. The criterias are as follows: similar building location and environment (in a densely populated settlements, for both shop houses and dwellings), similar café activities, and utilization of air conditioner. From the data samples, then the type of building, the volume and the ratio of the facade material can be determined.

B. Research subject definition by the evaluation of RT60, physical building condition and SPL value around the building

After the needed data was collected, the obtained results would be compared to obtain a building typology that can be used as a reference for the study. Furthermore, before the building was chosen as the benchmark study, the building is tested with the sound distribution test to ensure that the layout of the building does not have acoustic defects.

C. Collecting SPL data both inside and outside the building

Collecting data for SPL cafes are referring to the distribution of sound data analysis (2). This analysis are used to determine the spot and schedule of data collection. SPL of live music cafes were taken both outside and inside the cafe. It is intended to determined the causes and effect of the sound source.

Conclusion

Basically field study is the one aspect that must be reached to fulfill the needs of future research. The field study results expressed how to set the data sample of research subjects, and the results of building data identification can be used to conduct further researches.

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