

# Investigation of OPO soundscape environment for productive and comfortable indoor design based on audio-visual aspects

Beta Bayu Santika; Haram Lee; Jin Yong Jeon\*

Department of Architectural Engineering, Hanyang University, Seoul 04763, Korea

## ABSTRACT

This study was conducted to analysis the design guidelines of Indoor soundscape environment for productive and comfortable OPO based on audio and visual aspects. Perceived affective quality includes perceived work-performance, and willingness to work. Real measurement, virtual-reality technology, computer simulation, and auralization were applied to provide each OPO environment. Participants consisted of general adults with no visual or auditory problems, and they responded to the perceived affective quality questionnaire during experiencing OPO environments with different physical parameters, noise sources and visual aspects. As a result, it was confirmed that willingness to work, and work productivity were related to many indoor soundscape aspects, such as room acoustics, noise sources, noise sensitivity and physical parameters. In addition, the design guideline suggested to considered many aspects, such as classification of  $L_{p,A,S,4m}$ : class A ( $\leq 46$  dB), B ( $46 \text{ dB} \leq x \leq 48$  dB), C ( $48 \text{ dB} \leq x \leq 50$  dB), and D ( $50 \text{ dB} \geq$ ) as JND in this study found as 2dB. Increased comfort improved preferences, and increased content influenced perceived productivity, and these results can be utilized as fundamental data in the design of the sound environment for OPO.

Keywords: open-plan office, indoor soundscape, human perceived