

PP - (21380) - COMPARISON OF PHYSICAL QUANTITIES AND VIEW EVALUATION IN COMMERCIAL BUILDINGS

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Research or practical problem and objectives

Daylighting and view provided by windows are essential elements for a comfortable and healthy life. Especially in offices, obtaining a view is important from the viewpoint of productivity. Although there are lots of indices related to the provision of daylighting, quantitative indices related to view still need to be discussed. The purpose of this research is to verify whether the view indices already proposed are valid for commercial buildings, by comparing the physical indices with the evaluation of view obtained from the subjective experiments.

Methods and process (for empirical research)

The experiments were conducted in 23 rooms in commercial buildings and university facilities with different views, and 6 to 10 university students participated in the experiments. They stood 2.4 m away from the window and evaluated "the overall preference of visual environment obtained by the window". We calculated eight view indices including "solid angle", "visible volume" (an index weighted by the cube of the distance from the window to the opposite building), view indices of European Daylight Standard and so on. These indices are calculated from fisheye photos and simulation software (Radiance), and visible volume and solid angles were calculated for each view element, including sky, buildings, etc. In the analysis, logistic regression analysis was conducted using these indices as explanatory variables, and evaluation of view as the objective variable.

Main results preview and importance (or main arguments in the case of critical reviews)

As a results, "solid angle of the window", "solid angle of the sky" and "visible volume of each view element" are likely to explain the evaluations of view ($p\text{-value} < 0.05$), whereas "solid angle of outdoor building" and the others are unlikely to explain the evaluations of view ($p\text{-value} > 0.05$). In addition, since "visible volume" was much higher than that of "solid angle" for outdoor buildings, it was shown that an index that took into account distance to the view element may better explain the evaluation of view.

Palavras-chave : View, Window, Commercial Buildings