Model kenyamanan termal gedung pemerintah ramah lingkungan = Environmentally friendly state owned administrative buildings thermal comfort model / Bayu Andalas

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Abstrak

Saat ini sektor bangunan menyerap 40% energi global, 25% air global dan turut menyumbangkan 30% emisi gas rumah kaca di dunia. Pada kota metropolitan seperti Jakarta, zonasi bangunan dengan fungsi kantor adalah salah satu fungsi mayoritas dalam Rencana Tata Ruang Wilayah serta berkontribusi signifikan terhadap luas lahan terbangun. Kantor Pemerintahan sebagai gedung dengan fungsi spesifik memiliki peran penting dalam pelayanan kepada masyarakat dan produktivitas pengguna gedungnya terpengaruh oleh kenyamanan termal. Tujuan dari penelitian ini adalah menyusun model kenyamanan termal bagi pengguna gedung kantor pemerintah yang ramah lingkungan. Metode yang digunakan dalam penelitian ini adalah Mix Method (Kuantitatif dan Kualitatif) pengukuran tingkat kenyamanan termal pada manusia menggunakan skala PMV (Predicted Mean Vote) dan Percentage Person Dissatisfied (PPD) melalui kuesioner dan pengukuran langsung pada elemen fisik gedung, Konsumsi Energi pada gedung (IKE/Indeks Konsumsi Energi Gedung), Produktivitas kerja dan Indeks pelayanan masyarakat (Kepuasan Kerja dan Kinerja Kerja) serta lokasi gedung berdasar analisis spasial berdasarkan kewilayahan administratif di Pemprov DKI Jakarta. Hasil pengukuran menunjukkan, kenyamanan termal di Jakarta Pusat adalah 27,06°C to 30,06°C, sedikit lebih rendah dibanding Jakarta Utara (27,29°C to 30,41°C) dan kenyamanan termal di Jakarta Selatan adalah pada rentang 25,92°C – 31,89°C. Populasi dalam penelitian ini terbagi 2 (dua) yaitu: Populasi gedung adalah semua Gedung dengan fungsi kantor Pemerintah/BUMD milik Pemprov DKI Jakarta sejumlah 311 Gedung kantor dan pengelola gedung sebanyak 367 orang. Data menggunakan daftar database gedung milik Pemprov DKI Jakarta dari Unit Pelaksana Teknis Jakarta Smart City. Keterkaitan antara variable diolah dengan SEM-PLS Structural Equation Modeling - Partial Least Square untuk diolah dan dibuat permodelan. Hasil dari beberapa pengujian model didapatkan model yang cocok terhadap tujuan riset.   <hr /> A study to create an environmentally friendly model based on outdoor and indoor thermal comfort (physical and non-physical aspects) in public service buildings was conducted in Jakarta Metropolitan Area. The region is divided into 5 (five) administrative metropolitan areas (North, South, East, West, and Central areas). 367 building occupants/managers from typical government buildings (3-4 stories) with Air Conditioned and Naturally Ventilated (NV) buildings were selected for the survey. Indoor and outdoor measurements of specific air temperature and other relevant thermal elements were carried out in public service facilities in three regions (North, Central, and South). For each selected building, the occupants filled an e-questionnaire indicating the thermal response in different periods of the day by using the ASHRAE thermal comfort scale standard. Variations of air temperature and the thermal response were recorded in surrounding areas. The air temperature variation across the neighborhoods was found to be influenced by different region characteristics. The comfort temperature of subjects in Central Jakarta ranged from 27.06°C to 30.06°C, slightly lower than in the North Jakarta (27.29°C to 30.41°C)

and the comfort temperature of subjects in South Jakarta ranged from 25.92°C to 31.89°C. The variations of temperature across the regions and different geographical conditions such as land elevation were found to affect indoor thermal comfort. It is concluded that the spatial/geographical locations and land elevation had an impact on the indoor comfort of building occupants. Other findings in this research is fit model suggested in literature survey, examination of the public facility energy consumption in each region and factors influencing variables of thermal comfort using model measured by Partial Least Square Structural Equation Method. These findings could lead to a better strategy in building public service facilities in a specific geographic location.