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Occupants' perception on green-rated office building in Surabaya, Indonesia

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Abstract

The research studied the correlation between green office building and occupants' perception on the green–rated building. The purpose is to learn whether occupants perceive the green predicate in their daily activities, including in supporting indoor health and comfort, or the predicate just serves as formality. The selected green-office-building in Surabaya, Indonesia is Graha Pangeran. The building is in use for banking business. This research distributed questionnaire survey using Likert's scale. Questions were constructed using parameter of "Greenship" rating tools, a tool commonly used to certify green buildings in Indonesia. The tool used to assess physical condition of a building is now used to assess occupants' perception. The direct adoption from an assessment tool to collect occupants' perception is intended to learn any linear correlation between occupants' response and building's physical conditions investigated during the certification process. Close-ended questions with 5 points Likert's scale method was employed. The questions were grouped into parameters as in the Greenship, namely appropriate site development, energy efficient, water conservation, building materials, indoor health and comfort, and management of built environment. The data collected shows only 51% agreed the office building is within green–rated, 28% was neutral and 21% perceived the building as a non-green. From the parameter of "health and comfort", the perception of those experiencing comfort and neutral is in a balanced proportion between visible-audible and non-visible-audible parameters.
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Keywords: occupants' perception; green building; Greenship tool; Indonesia

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1. The existence of green buildings in Indonesia

The term of green building is considered as brand new knowledge. It might have been discussed before, but it officially emerged in the UK by the launch of BREEAM (Building Research Establishment Environmental Assessment Methodology) in the early 90s. LEED (Leadership in Energy and Environmental Design) of the US came later in the late 90s. Indonesia's Greenship was launched in 2010, behind neighboring countries of the region such as Singapore's Green Mark in 2005 and Malaysia's GBI (Green Building Index) in 2009.

Greenship is green building ratings introduced by Green Building Council Indonesia (GBCI), a non-government and non-profit council. However, since the advisory and steering boards of GBCI are of government-officers, we may acknowledge this council as semi-government council. To a certain extent, this council is the only council to certify green buildings in Indonesia. However, since green certification is not automatic, gets no incentive from the government, and needs a long and complicated process, from 2010 up to currently, GBCI has only certified 5 newly-built buildings, 4 existing buildings and 1 interior space. Today, 12 new buildings are entering the first stage of certification process and several others are on the waiting list to proceed to their self-assessment stage before being assessed by GBCI. All those certified buildings are in Jakarta, the capital city and its surrounding area. Some buildings in other Indonesia's cities announce themselves as green building, but yet to be officially assessed. Surabaya, one of Indonesia's largest cities also owns several green-rated buildings. They are green not only by self-rated, but also by international organization. Graha Pangeran was awarded Energy Efficient Building by ASEAN Center for energy award in 2002 and Graha Wonokoyo won the same award in 2006. These awards were gained long before the Greenship was introduced. The two buildings have not been certified yet by the Greenship due to limitation of time for assessment process and financial concern.

2. Indonesians' awareness on green buildings and prior studies

As green building is relatively a new term of reference, especially for Indonesians, the green-building concept remains at the initial phase and has not become a nationwide concern and awareness. There may be some Indonesians, organizations or associations in some cities in Indonesia initiate the awareness of sustainability issue by introducing the green building system. However, since these are not organized simultaneously, it is hardly successful. Moreover, it is not supported by assertive regulation that deals with environmental issue. The application of green building principles in Indonesia is more voluntary and has not become mandatory. Encouragement from the authority is also less, whilst in many countries incentives are given for property developers committed to green-building development. For example, in Singapore, all property developers are required to construct green buildings [1]. Ideally, promotion of green building is supported by ease building development permit issuance or incentives in the form of tax breaks. Ease building development permit issuance will not directly affect government budgetary plan, so this may be more preferably.

Study on the post occupancy evaluation (POE) of green buildings in Indonesia based on occupants' judgment or perception is rarely conducted. However, studies of this matter have been conducted in other nations. Research by GBCA [2], Gou et al [3], and Newsham et al [4], concluded that green buildings consistently outperformed non-green building in terms of comfort. They also concluded that green building's occupants were satisfied with the building design and the indoor comfort level. On the contrary, a study showed that only 11% of green buildings involved in the study met the intent of the thermal comfort standard and only 59% of occupants expressed their satisfaction with the thermal environment [5]. Even buildings with the highest ratings in occupant surveys had 5–10% dissatisfied occupants caused by uncomfortable feeling from something or other [6]. Even according to Paul & Taylor [7], no valid evidence emerged that green buildings are more comfortable than non-green buildings. Respondents of this study indicated that the indoor environment of green buildings experienced warmer indoor air that created uncomfortable environment. However, since the study was conducted in a temperate climate region, warmer indoor air issue may not be the case of those in warmer regions such as tropical or arid. That is why, according to Todd & Geissler [8] building assessment systems must reflect national, regional, and local differences if they are to be accepted and used, which in other words might express that POE of a green building in temperate climate might not be suitable for benchmarking other regions with different climate, especially of those with warmer

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