

CHAPTER 2

Occupant Well-being Consideration in Sustainable Building Assessment Tools

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2.1 INTRODUCTION

Sustainable building refers to a practice in the building sector that emphasises environmental protection and resource efficiency throughout the life-cycle of a building (U.S. Energy Information Administration, 2003). Over the years, the built environment industry has become a major target for conservation initiatives due to high resource and energy consumption, which contributes to greenhouse gas emissions (Cross et al., 2017). Although the environmental impact of the building sector is vital, buildings also have a substantial influence on occupant well-being comprising occupant's comfort and health as people spend more time indoors than outdoors. In the commercial sector, occupant well-being and satisfaction are crucial as decreasing the adverse consequence of buildings on the environment, especially when investing in sustainable or green buildings (Khoshbakht et al., 2018).

From a real estate perspective, one of the significant financial benefits of sustainable building is improved indoor

environmental quality. This is because the potential cost of a poor indoor environment in a building can be regarded as a direct and indirect cost. The direct cost is medical expenditures related to various health problems among the occupants which caused by the poor indoor environment of a building. While indirect cost is associated with reduced occupant performance or productivity due to higher absenteeism at work. Nevertheless, as asserted by the World Green Building Council (2014), the building industry has put a greater emphasis on minimising building energy consumption, despite the fact that people account for over 90 percent of a typical organization's expenditures.

The overall output of the indoor environment is a vital element of a building and is crucial to its occupants' well-being. In the past decades, multiple factors, such as indoor light exposure, noise, thermal comfort, indoor air quality and odours have been identified as impacting on occupant well-being (Kamaruzzaman et al., 2011). Scientific research, however, suggests that a broader range of indoor environmental aspects, such as opportunities to adjust the indoor environmental conditions, connection with nature, color and unpredictable hazards can potentially affect occupant well-being (Sarbu & Sebarchievi, 2013). This implies that a more extensive assessment is required of the social, physiological, psychological and ergonomic features of the physical environment that can impact occupant well-being and health (Samet & Spingler, 2003).

Since 1990s, many certification incentives have been established to enhance the level of sustainable practices in the building sector, such as green building rating tools and sustainable building tool (SBTool). As more socially focused sustainability issues arise in the building industry, such as

preserving occupant well-being and health, this has contributed to the establishment of recent assessment tools that emphasise occupant well-being, such as the Fitwel, Living Building Challenge (LBC) and WELL certification schemes. It has been asserted that well-being is the latest sustainable element in real estate, and that creating a balanced and healthy environment will benefit not just occupants but also developers, property owners and relevant stakeholders (Heidari et al., 2017; Leccese et al., 2021).

Despite the fact that the condition of the indoor environment is regarded as a primary goal in all existing building assessment tools, the accuracy and reliability of these building assessment tools in assessing occupant well-being as a whole have been commented. This is because sustainable buildings in various countries have been tailored to meet the particular needs of the region (Alyami & Rezgui, 2012), hence the approaches used to improve occupant well-being in existing building assessment tools may vary across the countries. Furthermore, as the concept of occupant well-being is broad with the combined impact of various indoor environmental factors, several existing building assessment tools have focused on a limited occupant well-being aspect in a certain climate zone. Therefore, the present study aims to explore the extent to which sustainable building assessment tools take into account the occupant well-being aspects.

2.2 THE NOTION OF OCCUPANT WELL-BEING

In the present scenario, the practices of social sustainability include human-centric design for buildings that improve occupant well-being through the implementation of sustainable designs and environmental-friendly features (Zhang & Tu, 2021). The perspective of social sustainability highlights that