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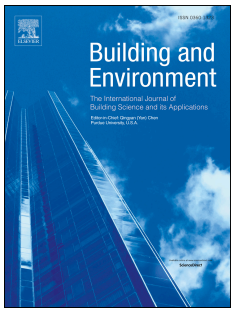

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Occupant Satisfaction in Three-Star-Certified Office Buildings Based on Comparative Study Using LEED and BREEAM

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ABSTRACT

There is still a gap in research on the impact of Chinese Green Building Three-Star evaluation standard on occupant satisfaction. This paper reports the results of a preliminary comparative analysis of the satisfaction levels of occupants in relation to the building overall, building performance and several indoor environment quality (IEQ) parameters in different seasons for Three-Star certified and non-certified office buildings in the cold zone, hot summer-cold winter zone, and hot summer-warm winter zone. In addition, in light of previous research on occupants' satisfaction with LEED and BREEAM certified buildings, a further comparative analysis was performed to explore the difference in the impacts of different rating tools on occupant satisfaction. It was found that Three-Star building users were more satisfied than the users of non-certified buildings, with significant differences for all the parameters investigated without exception. In addition, in the relation to the air freshness in the transition season, air cleanliness in the transition season, humidity in winter, air cleanliness in winter, natural lighting in winter, acoustic environment in winter, colors & textures, IEQ control, building cleanliness, building maintenance, and building overall, Three-Star certification had a relatively small effect on occupant satisfaction in all three climate zones. The results of the comparative analysis seemed to show that the effects of LEED or BREEAM certification on occupants' satisfaction were not as marked as that of Three-Star certification. However, the reason behind this could be the difference in the performance of non-certified buildings, not the assessment methods.

KEYWORDS

Three-Star evaluation standard; LEED; BREEAM; Occupant satisfaction; Post-occupancy evaluation; Indoor environmental quality

1. INTRODUCTION

During the 2015 United Nations Climate Change Conference, the government of China indicated that carbon dioxide emission would peak in approximately 2030, which was hoped to be earlier. Carbon dioxide emissions per unite of GDP in 2030 were predicted to be 60-65% lower than in 2005, with non-fossil energy accounting for approximately 20% of the primary energy consumption [1]. These targets reinforce the prominent role played by the rapid development of green buildings as an important measure to realize China's ecological civilization construction, energy-saving, and emission reduction goals, which means the Three-Star evaluation standards is assuming greater importance.

In China, the Three-Star evaluation standard is a semi-mandatory, consensus-based, government and market-driven program that provides certification of green buildings by third-party, contributing to maximizing the conservation of resources (including energy, land, water and materials), protecting the natural environment, and minimizing pollution. The Three-Star evaluation standard