Chapter 11
Building Performance Comparative Study:
The Indoor Environment Quality and Energy Efficiency – Green Building vs. Conventional Building

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ABSTRACT

It has been argued that the "green" building has a better indoor environment quality than the conventional building. This concern for the poor indoor environment quality of the building will cause symptoms of "sick building syndrome" and will affect the health of occupants. In addition, energy efficiency is fundamental to attain sustainability in green buildings. But there is no evidence directly showing us that a green building is more comfortable and satisfactory than a conventional building. This research determines the difference in indoor environment quality (IEQ) of both buildings through finding out the parameters of IEQ and testing the occupants' perception and satisfaction. A green building and a conventional building will be targeted, and a list of questionnaires will be given to the occupants to obtain their perception and their satisfaction level. The responses from the occupants of the different buildings will be compared to look into the difference.

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INTRODUCTION

Indoor Environmental Quality (IEQ) is defined as the quality of a building's environment in relation to the health and wellbeing of those who occupy space within it., According to World Health Organization (1984), health is a kind of complete mental, physical and social well-being and not purely the absence of disease or infirmity in relation to the building occupants' health. Indoor Environmental Quality has been an issue of discussion since antiquity; the famous Greek "father of medicine" Hippocrates observed that when air is polluted, people become sick (Karapetsis & Alexandri, 2016). Better indoor environmental quality can enhance the lives of building occupants, enhance the comfortability and safety of occupants when staying in the building, and increment the resale value of the building.

The United States Environmental Protection Agency stated that a 'Green Building' is a structure or a building that utilizes the environmentally friendly method from conception until deconstruction of the building and the green building is an 'expert' in cost-saving and carbon saving (Evan, 2016). However, there is no standard guideline, or every green building must be to same due to different countries and regions having different characteristics. The most important is to build a green building that is suitable for your own country and could make the occupant feel satisfaction and comfort (World Green Building Council, 2020).

Nowadays, most individuals spend most of their time indoors and the overall indoor environment quality is significantly more contaminated than it could be, and undeniably pollution levels might be higher than the outdoors. According to Freed (2006), building materials and poor lighting, alongside different factors, are conscientious for these. Low IEQ will affect the sick building syndrome in which grievances of ill health are more typical than might sensibly be normal and the occupant in the building will suffer health problems or comfort issue correlated effects that will be interrelated directly to the spending time in the building.

Green building is an idea, a thought joining a wide spectrum of solutions and best practices. It could improve public and occupant health by enhancing indoor air quality, and reducing environmental impact (Kanika, Singh, Rana, & Dahiya, 2016). Previous studies' findings are combined on the issue of whether green buildings contribute to their users with a secure, enjoyable, and efficient work atmosphere. Proponents contend that a green building improves indoor environment quality and enhances occupants' productivity compared to a conventional building (Paul & Taylor, 2007).

Presently like never before the required for efficient buildings is felt around the world; carbon discharge, higher energy expenses, and human health are at risk. "Green building is not a matter of choice or extravagance yet a necessity for the ecologically cognizant industry professionals, developers, government authorities, proprietors, and the rest of the stakeholders" (Ashuri & Durmus-Pedini, 2010).

LITERATURE REVIEW

Environment health

The World Health Organization (WHO) explains the environment, as it relates to health, as "all the physical, chemical, and biological factors external to a person, and all the related behaviors." Environmental health consists of prohibiting or regulating disease, injury, and disability related to the interactions between people and their environment (WHO, 2006).