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THE AWARENESS TOWARDS GREEN OFFICE FACILITIES

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A project report submitted in partial fulfillment of the
requirement for the award of the degree of
Master of Science (Construction Management)

Faculty of Civil Engineering
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NOVEMBER 2010

I declare that this project report entitled “*The Awareness towards Green Office Facilities*” is the result of my own research except as cited in the references. The report has not been accepted for any degree and is not concurrently submitted in candidature of any degree.

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To my beloved family especially my devoted parents.

Love you forever.

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ABSTRACT

A lot of efforts have recently been made to design and construct energy efficient, ecologically sustainable offices generally regarded as “Green Offices”. However, the sustainability focus can often be dimmed once the building has been occupied. A highly sustainable “green” office can still perform poorly if performed inefficiently. The final performance of green offices highly depends on their users’ awareness. On the other hand, some general practices can improve the efficiency of conventional offices in terms of green features. The aim of this study is to evaluate the level of awareness towards green office occupancy requirements. To achieve this aim a study has been carried out to evaluate the level of awareness of the occupants of the selected green office towards the expected performance criteria based on literature source and Green Building Index standards as well as the information gathered from the interview with the professionals involved in Green Building Industry. As a matter of comparison, a similar evaluation process was also done for occupants of a non-green office. The findings of the study indicate that although in general the awareness in green office users is higher than conventional office workers but the overall awareness is quite low. Apart from that the study also proposed some general guidelines to improve the efficiency of offices in terms of green features during their operation phase.

ABSTRAK

Pelbagai usaha telah dilaksanakan dalam merekabentuk dan membangunkan sumber tenaga yang cekap dan pejabat yang mengekalkan ekologi asalnya yang di kelaskan sebagai “Pejabat Hijau”.Walaubagaimanapun, pengekalan ekologi yang asal telah diabaikan apabila bangunan telah didiami. Pengekalan pejabat “ hijau” masih lagi menunjukkan hasil yang tidak memuaskan jika ia dibangunkan dengan tidak efisien. Hasil akhir prestasi pejabat hijau amat bergantung tinggi kepada kesedaran pengguna. Oleh sebab itu, sesetengah amalan biasa boleh membantu dalam keberkesanan pejabat konvensional dalam aspek kehijauan. Matlamat kajian ini ialah untuk menilai tahap kesedaran bagi menilai tahap kesedaran penghuni bangunan untuk memilih pejabat hijau kearah kriteria pencapaian berdasarkan sumber literatur dan Indeks Bangunan Hijau beserta maklumat yang diperolehi dari temubual dengan profesional yang terlibat dalam Industri Bangunan Hijau. Bagi tujuan perbandingan, proses penilaian yang sama juga dijalankan kepada mereka yang menduduki bangunan bukan hijau. Hasil keputusan kajian ini menunjukkan bahawa kesedaran dalam pejabat hijau secara amnya masih rendah walaupun lebih tinggi daripada kesedaran pekerja di pejabat konvensional. Dalam kajian ini juga turut mencadangkan beberapa garis panduan yang dapat membantu dalam meningkatkan kecekapan dalam pejabat dalam aspek kehijauan semasa bekerja.

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CHAPTER 1

INTRODUCTION

1.1. Background of the Study

Some scientists have entitled the current century “The Beginning of the End” for our planet. For the first time in the history of civilization more people inhabit the cities than dwell in the countryside. Two-thirds of the population will occupy cities by 2050. Current ways of living made possible largely because of cheap and abundant fossil fuels, are not sustainable in the long term. However, as development increases, mankind’s irresponsible relationship with the earth is reaching a “balancing point” wherein the adverse effects of our actions may become irreparable. Global climate change has significantly changed the operation and efficiency of our planet and “the world has only one generation, perhaps two, to save itself”. Efforts to change societal behaviors and professional practices have been slow, but the public is beginning to understand the ramifications of global warming.

Chapter 36 of Agenda 21, an action plan of the United Nations (UN) related to sustainable development ratified in Rio de Janeiro at the United Nations Conference on Environment and Development (Earth Summit) in 1992, stresses on the following:

“Education, including formal education, public awareness and training, should be recognized as a process by which human beings and societies can reach their fullest potential. Education is critical for achieving environmental and ethical awareness, values and attitudes, skills and behavior consistent with sustainable development and for effective public participation in decision-making. Both formal and non-formal education are indispensable to changing people’s attitude so that they have the capacity to assess and address their sustainable development concerns”.

According to Sharifah A. Haron et. al. (2005), the changing lifestyle of Malaysians in recent years has led to a more “consumption-oriented” lifestyle. This phenomenon, in turn, resulted in more unsustainable practices and finally many urban life problems such as water crises and solid-waste management. Based on National Recycling Program Report, each resident in Klang Valley area produces 1.5 kg of waste every day. At this rate, at least 80% of the 230 available disposal sites will be filled up within 2 years.

Based on the findings of Ar Chan Seong Aun et al. (2004) in Pertubuhan Arkitek Malaysia CPD Seminar, a comparison of the data by DANIDA shows the amount of energy use per capita output in Malaysia at about 26 GJ/1000USD compared to Thailand at 20 GJ/1000USD and Japan at 7 GJ/1000USD. It is obvious that Malaysia is not using energy very efficiently either. Industrial consumers use about 40% of primary energy, as well as about 55% of the electricity (which consumes about 38% of

primary energy) used in Malaysia. This means that industrial consumers use about 60% of the total energy used in Malaysia.

The abovementioned facts show that public awareness towards sustainable practices is fairly low in Malaysia and needs more attention from the relevant scholars, authorities and other sectors involved in public education.

1.2. Issues and Problem Statement

Buildings, infrastructure and the environment are highly linked. Energy, materials, water and land are all consumed in the construction and operation of buildings and infrastructure. These built structures in turn become part of our living environment, affecting our living conditions, social well-being and health. It is therefore important to explore environmentally and economically sound design and development techniques in order to design buildings and infrastructure that are sustainable, healthy and affordable, and encourage innovation in buildings and infrastructure systems and designs. However, the sustainability focus can often be dimmed once the building has been occupied. A highly sustainable “green” office can still perform poorly if performed inefficiently. The final performance of green offices highly depends on their users’ awareness. On the other hand, some general practices can improve the efficiency of conventional offices in terms of green features.

1.3. Aim and Objectives of the Study

The aim of the study is to identify the key features of green offices in general, evaluate the awareness level of the end-users towards these features and lastly discover the areas with lower levels of awareness. To attain this aim the following objectives are pursued:

- (i) To identify the main features of green office projects
- (ii) To evaluate the awareness of the end-users towards key green features that affected them through a comparative study
- (iii) To develop a proposal for designing guidelines to improve green practices awareness

1.4. Scope of the Study

The scope of the study focuses on the level of awareness among green office users and also non-green or conventional office users and the way they interact with their daily office works. It focuses on office buildings within Johor Bahru State in Malaysia. For the users' awareness comparative study, Setia Eco Gardens users in Kota Iskandar as a green building and JKR users as a non-green building are addressed.

1.5. Brief Research Methodology

In order to achieve the objectives of the study, essential stages of methodology were conducted. First of all a comprehensive literature review was conducted on green office users' manuals from other countries as well as books, journals and publications regarding users' awareness and assessing the actual performance of such buildings. In addition, semi-structured interviews were carried out with the expert panel along with visits to Pertubuhan Arkitek Malaysia and some green offices in Selangor and Johor Bahru to verify and localize the findings from the literature review. Based on the information obtained from these two sources, a questionnaire survey was performed on two groups of green and non-green office building users and the data were analyzed and compared using statistical methods. The findings from the previous stage were used to propose a series of guidelines to be asserted in educational materials for the users.

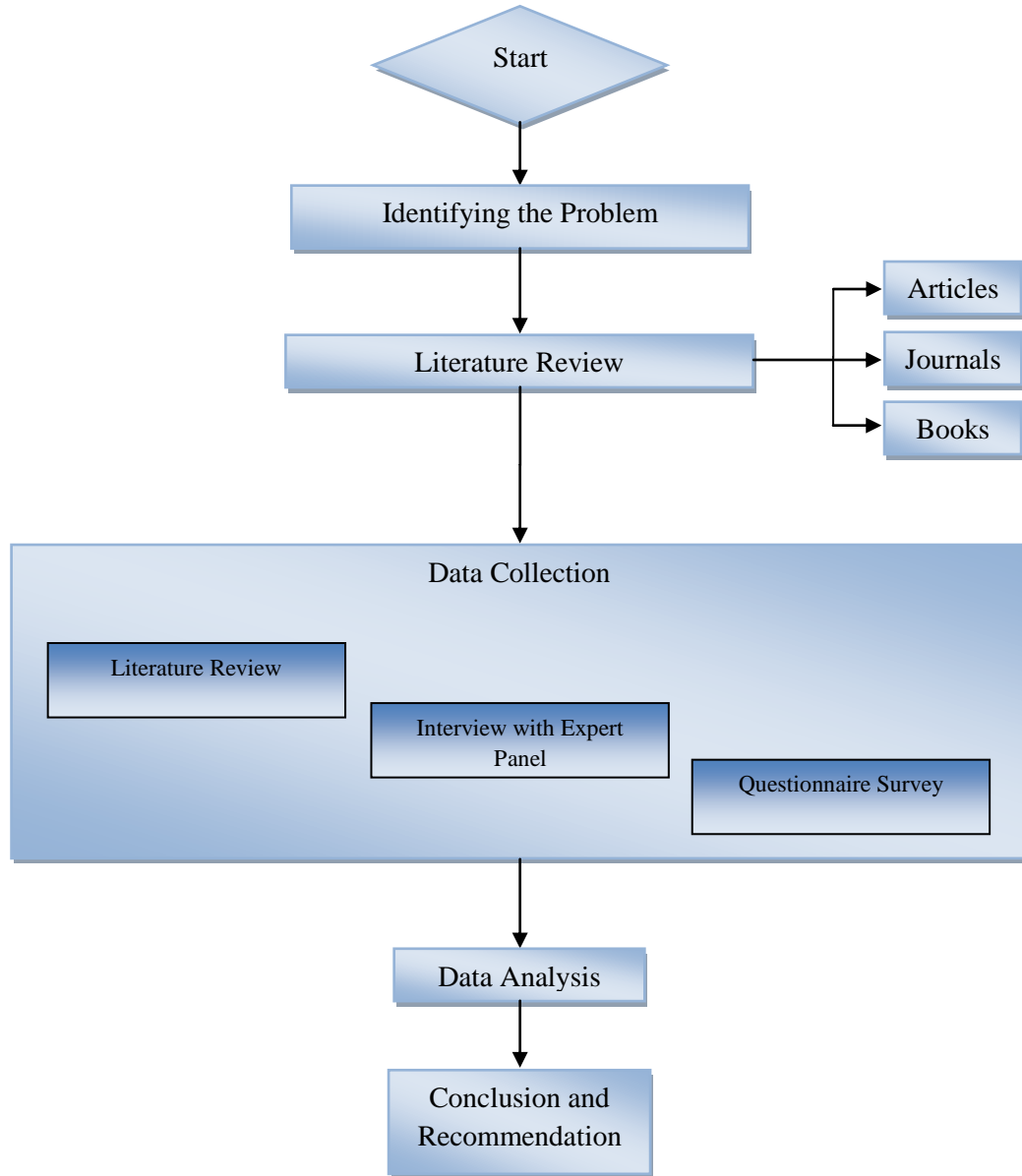


Figure 1.1 Flowchart Diagram of the Study Methodology