GREEN BUILDING BARRIERS IN CONSTRUCTION FIRM: A STUDY IN KEDAH

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ABSTRACT

Green building or widely known as green construction preserves most of the resource competence throughout a building’s life-cycle: from planning to design, construction, operation, maintenance, renovation, and demolition. Green building has become increasingly on-demand and important in Malaysia, however, still has not become the interest of all groups in the construction industry. While there is a wide range of welfares for the society, the development of green building still agonizes from different kinds of market barriers which seem to hinder the implementation of the green building in developing countries including Malaysia. Therefore, the objective of this study is to investigate possible barriers in implementing green building in construction firm around Kedah State. In this research, the respondents were conducted among the management team and the method applied for collecting data is qualitative. The results from the interview show that lack of credit resources and lack of awareness are the major barriers in implementing green building in the construction firm. This knowledge contributes to the implementation of green building in the construction firm.

Keywords: green buildings, green construction, construction firms, barriers

INTRODUCTION

In the past, environmental issues have been considered as a burden to business, associated with costs and restrictions which impede companies’ competitiveness. However, in recent times, the environmental agenda has been found as a place among richer economies to see the emergence of proactive environmental (Omar, Othman, & Jabar, 2017).

It is commonly acknowledged that green building is an effective approach through which the need for implementing sustainability and sustainable development within the construction industry can be addressed. Green building has been well received by governments around the world as a strategy for improving the sustainability of the construction industry (Alia, Bohari, & Xia, 2015; Arokiaprakash & Kumar, 2018; Kusumawati & Setyowati, 2017). Some of the major features that define a green building include a climate-responsive architectural design; passive design features and techniques for space heating, cooling, ventilation, and daylighting; the use of renewable sources of energy; efficient and environmentally friendly practices during construction; and, post-occupancy, the use of vernacular materials and a focus on occupant health,
safety, and comfort.

A perfect building is able to serve a purpose while still allow us to preserve most of the natural environment around the project site. The construction and operation will promote a healthy environment for all involved, and it will not disrupt the land, water, resources and energy in and around the building (Lop, Ahmad, Aqlima, & Nik, 2016). The green building can range from environmental to economic to social from the continuously being developed with the new technology (Samari, Ghodrati, Wira, & Shafiei, 2013). We can take maximum advantage of environmental and economic performance by accepting greener practices. The design and construction provide the most substantial benefits when green construction methods combine with the design. Reduce wastage of water, conserve natural resources, improve air and water quality, protect biodiversity and ecosystems can become the benefits of green building.

Green strategies aim to increase sustainability, reduce operation costs, maintain occupants’ health, and conserve energy (Zhang et al., 2012). However, the status of implementation of green building in Malaysia is still very much lacking behind in green building developments. Even though the green building has been attached more importance recently, barriers still exist to its widespread adoption. Barriers to green buildings must be understood to promote these buildings (Samari et al., 2013; Tam & Sydney, 2007; Zhang, Shen, Tam, Wing, & Lee, 2012). The step of identifying green building barriers becomes essential here. These barriers differ from one country to another. As a result, this study tries to investigate the possible barriers faced by the construction firm.

Based on the current problems and previous studies which have been reviewed, the objectives of the study are:

i. To investigate the current status of green building implementation.
ii. To identify possible barriers to implement the green building.

**LITERATURE REVIEW**

Various definitions of green buildings exist in the present day, generally, a green building can be defined as the practice of building structures and implementing procedures that are responsible toward the environment and resource-efficient throughout the life-cycle of the building. According to Frej and Browning (2005), green building is an outcome of a design which focuses on increasing the efficiency of resource use energy, water, and materials while reducing building impacts on human health and the environment during the building's lifecycle, through better siting, design, construction, operation, maintenance and removal. Based on previous research (Arokiaprakash & Kumar, 2018; Kusumawati & Setyowati, 2017; Leung & Chau, 2013; Mosly, 2015; Ping, Chan, Darko, Olanipekun, & Ameyaw, 2017; Samari et al., 2013), most of the common barriers to the green building implementation can be categorized into:

i. Financial
ii. Governmental
iii. Lack of awareness and knowledge
iv. Lack of technical support
Financial barriers exist in many forms in the context of green buildings. For instance, the lack of credit resources to cover the upfront cost, and the prices of green building systems are high and require long payback periods, so they opt instead for traditional applications. A number of researchers identified the high cost of green buildings and technologies as a barrier (Arokiaprakash & Kumar, 2018; Mosly, 2015; Ping et al., 2017; Reza et al., 2011; Samari et al., 2013; Zhang et al., 2012). In China, the high additional cost of green technologies is considered the top implementation barrier (Zhang et al., 2012).

Similar, previous research suggests that government roles, especially incentive instruments such as structural incentives, subsidy and rebate program, tax incentive scheme, low-interest mortgage loan, voluntary rating system, and market and technology assistance, are the significant drives for eliminating barriers to green building development. Governments play very significant roles in the promotion or demotion of green buildings. They are capable of setting a number of regulations that favor energy conservation and energy efficiency, which results in the public obliged to green building applications. Another government barrier is the lack of appropriate incentives for green buildings systems and technologies. Incentives have a major function because they motivate people to purchase government-listed products. They help reduce the costs of green building systems and technologies, thus making them more attractive.

According to Reza et al. (2011), the main barriers especially those in the construction industry is to create a paradigm shift in environmental issues for all Malaysians. Lack of awareness, even from the architects, consultants, and clients have been repeatedly mentioned in this research as the key issue to the slow progress and reluctance in getting involved in green buildings. The lack of an expert's knowledge in green building development creates an environment that lengthens development time frames (Samari et al., 2013). In addition, the expert's knowledge is a key factor to promote sustainable building. The level of general awareness about sustainable buildings and their benefits among construction professionals is low (bellow moderate). It is suggested that the government can bring in foreign experts and at the same time, provide training so they can have their own experts. Awareness on the environmentally-friendly buildings and products must also be heightened, not just to the relevant parties in the building industries, but also to the general public so that more demand for green buildings can be achieved.

Moreover, anew introduced technologies or concepts (green buildings) and their systems generally experience technical issues. Technical barriers include lack of professional personnel, information, and reliability. Many studies have identified technical barriers as obstacles to green building diffusion (Ping et al., 2017; Samari et al., 2013; Zhang et al., 2012). The presence of skilled personnel is important for the correct design, operation, and maintenance of a green building, as these buildings have unconventional systems and technologies and require at least the supervision of a professional in the field.
METHODOLOGY

This research applies qualitative research method in order to collect sufficient and relevant data to address the research objectives of this study.

To answer this research problem, a literature review on green building barriers and related subjects was conducted, followed by an interview carried out by the author with different industry experts around Kedah state. These face-to-face, in-depth interviews were organized around open-ended questions. The face-to-face approach was chosen to allow the researcher to focus on participant body language when discussing these areas (Dejonckheere & Vaughn, 2019). The duration of the interview ranged from 1 to 2 hours, wherein interviewees had the chance to freely express all of their thoughts and ideas in detail. All interviewees’ personal information was kept confidential. The interviewee selection criteria were as follows:
1. Top senior officials in the building and construction sectors.
2. Experienced, knowledgeable and able to elaborate on the interview questions.
3. Interested in and keen on being part of the research.

RESULTS

This study meets the primary objectives, which is to investigate the current status of green building implementation. It also meets the objectives to identify possible barriers to implementing the green building. Table 1 presents the status of green building implementation and the identified implementation barriers.

<table>
<thead>
<tr>
<th>Construction Firm</th>
<th>Status of Implementation</th>
<th>Barriers</th>
</tr>
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<tbody>
<tr>
<td>A</td>
<td>Not Implement</td>
<td>Lack of awareness</td>
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<td></td>
<td></td>
<td>Lack of promotions</td>
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<td></td>
<td></td>
<td>Lack of financial support</td>
</tr>
<tr>
<td>B</td>
<td>Not Implement</td>
<td>Lack of awareness &amp; knowledge</td>
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<tr>
<td></td>
<td></td>
<td>Lack of credit resources to cover the upfront cost (financial)</td>
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<td></td>
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<td>The suitability of the green building</td>
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</tbody>
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DISCUSSION

The major barrier in implementing the green building is the lack of credit resources to cover the upfront cost. Both interviewees admitted the high initial cost of green technologies and systems used in green buildings. They shared the same thoughts with regard to high cost, mainly due to the importation of the equipment from other countries, which leads to higher prices compared with those of traditional equipment assembled or manufactured locally. It is due to the high price of the green construction material. Even if they implement it, the sales from the green building will not cover the cost of the construction. The finding suggests that the government should play a major
role in order to implement a green building. They can help especially in incentive instruments such as structural incentives, subsidy and rebate program, tax incentive scheme, low-interest mortgage loan, voluntary rating system, and market and technology assistance (Samari et. al., 2013).

The construction firms did not aware of the meaning of the green building and what will be affected by the green building construction. Lack of awareness, even from the architects, consultants, and clients have been repeatedly mentioned in this research as the key issue to the slow progress and reluctance in getting involved in green buildings. If every firm did not take this seriously, this will pose a problem to the individual in the future in the increasingly rapid of development. Green building research must focus on studying the benefits of green buildings and expand on these buildings’ positive applications in Malaysia. The government should fund the initial stage of green building research through researchers and academics in universities and research institutions. It can contribute significantly to raise awareness and education of the public and professionals practitioners (Arokiaparakash & Kumar, 2018).

The interviewee also highlighted that there is no clear strategy for promoting green buildings in Malaysia, which seriously undercuts the success of these buildings and lengthens the time required to secure public acceptance. The interviewees explain that the adoption of innovative facilities needs to be promoted and supported by the government at the early stage of development; otherwise, the industry will adopt a wait-and-see attitude before implementation. When the industry did not have experience of innovative facilities, they consider it risky for the long term.

From the interview, the researcher identified other possible barriers to implement the green building. According to construction firm B, green construction is not suitable for a small project such as individual housing development. It is more suitable for commercial building such as a factory or hospital. This argument might be due to lack of knowledge regarding the green building.

CONCLUSION AND RECOMMENDATION

As a conclusion, the green building must be enhanced so that the world can have a safe and healthy environment for the present generation and future generation. This is because the impact of the green building is a significance to restore human nature. It is one of the most important changes for the future.

Green building has become an important element in today construction design. It uses many technologies from earlier or modern technologies. There are many obstacle and problems to achieve the goal of sustainable development. But, by successfully maintaining sustainability, there is a chance and an opportunity for us to help our own world, to save the earth from global damage and destruction.

More attention should be given to increase the awareness and knowledge about the green building especially among experts in construction firm. Campaign or workshop can be held to inform about the importance of the green building. All the parties involved to develop a green building project must also need to add their knowledge to implement the green building. All of the parties need to play an important role. This
will benefit all individuals, especially for the next generations. They will also benefit from the development of the developed now.

The effort of certain parties must be enhanced to overcome the barriers occurred in the construction firm. The development nowadays will provide benefits to the next generation. With the intervention from the government or the construction industry development board (CIDB), the implementation of the green building can be easier. The government should shift from voluntary to mandatory green building measures. This will make all the construction, big or small size construction firms to follow the regulation.

Through this study, researchers have elaborated on the major obstacles faced by construction firms in implementing green building construction. Practically, it is hoped that the study findings will contribute in providing the information in order to obtain the knowledge regarding the major barriers that had been faced by the construction firm in order to build a green building. Also, it can be used by the future researcher that may do the research with the same topic or related.

REFERENCES


