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SEMINAR ON BUILT
ENVIRONMENT
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(USBET) 2023**

**SUSTAINABLE BUILT
ENVIRONMENT**

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THE BARRIERS OF IMPLEMENTING GREEN RESIDENTIAL BUILDING DEVELOPMENT IN KEDAH

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ABSTRACT

The barriers to green residential building development in Kedah may include high cost, lack of market demand, limited supply, and lack of incentives. This research aimed to determine the barriers to green residential development in Kedah. This research was conducted using a questionnaire as the main research instrument and a case study of a green residential area in Kedah. This questionnaire was distributed via a Google Form link, out of which 58 were returned and used for analysis. The respondents consisted of 34.5% engineers, 27.6% project managers, followed by 20.7% developers, and 8.6% contractors and consultants. The findings of this research aimed to enhance knowledge, facilitate financial assistance, enforce regulations, encourage cooperation, and increase resource availability, ultimately making it easier to implement sustainable practices and overcome barriers to green residential construction in Kedah.

Keywords: *Barriers, residential, green building, development, quantitative, GBRs*

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INTRODUCTION

Over the past three decades, Malaysia has, among other nations, played an amazing role in promoting the value of energy efficiency. The Council of the Malaysian Architects Association (PAM) has confirmed and approved the formation of the newly tasked Capability Committee in August 2008, with the goal of creating and establishing the Green Building Index (Sulzakimin, 2019). One of the initiatives that could save the environment is green energy. Green energy is any form of energy produced from renewable natural resources, such as sunlight, wind, and water (Global, 2022). In many circumstances, green buildings can have a better impact on the environment by producing their own energy or by boosting biodiversity, in addition to reducing or eliminating negative environmental consequences by using less water, energy, or natural resources (Green Building Council, 2022). This study aimed to identify the barriers to the development of green residential buildings in Kedah. According to the certificates that have been given, 13 buildings in Kedah are GBI certified, as listed in Table 1.

Table 1: Certified GBI Buildings in Kedah

No	Name
1.	Sky Residences Condominium Development I
2.	Osram Kul2 Kulim, Kedah, Malaysia
3.	Molnlycke Healthcare Sdn. Bhd. Kulim, Kedah, Malaysia
4.	Hospital Sultanah Maliha, Langkawi, Kedah, Malaysia
5.	Hospital Sultanah Bahiyah, Alor Setar, Kedah, Malaysia
6.	The Burau Luxury, Langkawi, Malaysia.
7.	The Burau Deluxe, Langkawi, Malaysia.
8.	Intel Malaysia KM6 Building Kulim, Kedah, Malaysia.
9.	Intel Malaysia KM5 Building Kulim, Kedah, Malaysia.
10.	Intel Malaysia KM3 Building Kulim, Kedah, Malaysia.
11.	Intel Malaysia KM2 Building Kulim, Kedah, Malaysia.
12.	Intel Malaysia KM1 Building Kulim, Kedah Malaysia.
13.	Pantai Hospital Laguna, Merbok.

Table 1 lists green buildings, with different levels of green certifications that have been identified in Kedah, Malaysia. Industrial manufacturing buildings have the highest number of certifications, with a mix of Platinum, Gold, and Certified LEED statuses. Healthcare and office buildings have also shown significant efforts in pursuing green certifications, with Gold, Platinum, Certified, and Silver levels observed. The residential sector, however, seems to have a relatively limited representation in this list, with only one building holding a Silver LEED certification.

METHODOLOGY

The quantitative method is commonly used as a straightforward option for analysing quantitative data. To achieve the objectives of this research, the following research activities have been conducted.

Literature Research

A literature review is a research method related to the identification and evaluation of previous publications by researchers, academics, and practitioners.

Site Observation

Observation and inspection were conducted to obtain an overview of the information on the structures based on the literature review.

Respondents

A questionnaire was distributed via a Google Form link and 58 respondents returned their answer. The total number of respondents was chosen based on the following research work; *An Investigation into the Prospects of Green Building Practice in Nigeria* (Dahiru et al., 2014).

Limitations

The scope of this study was constrained by the difficulty of conducting meetings or face-to-face communication because of the distance between the researcher and the respondents. Although the inquiry was made through a Google Form, it has been challenging for the researcher to guarantee that the respondents would have time to participate.

ANALYSIS

The survey was circulated through emails and social media sites, such as LinkedIn

and WhatsApp via Google Forms. The respondents were given nine weeks, beginning on 2 April 2023 and ending on 1 July 2023, to respond to the questionnaire.

- Position in the green sector

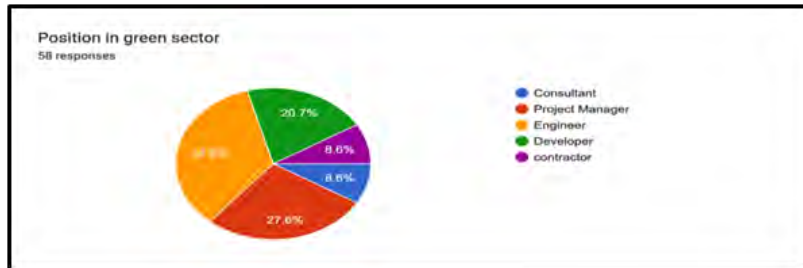


Figure 1: Respondents' Position

Based on Figure 1, the position with the highest percentage is engineers, accounting for 34.5% of the respondents or approximately 20 individuals. The second highest percentage was project managers, representing 27.6% of the respondents, or approximately 16 individuals. Meanwhile, the role with the lowest percentage was tied between consultants and contractors, both at 8.6% or approximately 5 individuals.

- Working Experience

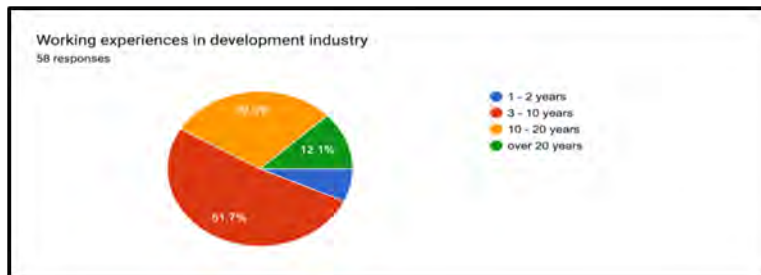


Figure 2: Working Experience

Based on Figure 2, the highest percentage of respondents (51.7%), accounting for 30 individuals, has 3 to 10 years of working experience in the development industry. Next, the second highest percentage consisted of approximately 17 respondents with 10 to 20 years of experience, representing 29.3%. Lastly, the lowest percentage of 6.9% of respondents have 1 to 2 years of working experience in the development industry, comprising approximately 4 individuals.

- Necessary Green Residential Building

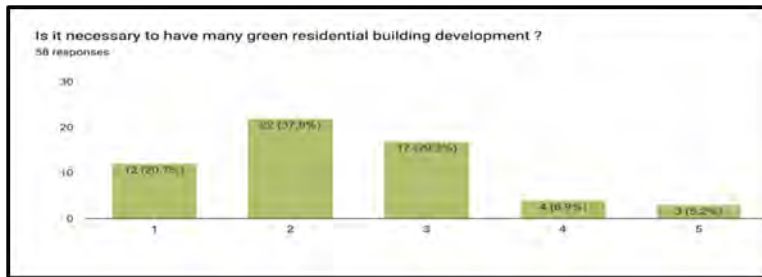


Figure 3: Green Building

Based on Figure 3, the highest percentage of respondents (37.9%) disagree with the necessity of green residential building development in Kedah, accounting for approximately 22 individuals. Next, 20.7% of respondents have a neutral stance regarding this question, representing approximately 12 individuals. Lastly, the category with the lowest percentage consisted of approximately 3 respondents or 5.2%, who strongly agreed with this question.

- High Cost

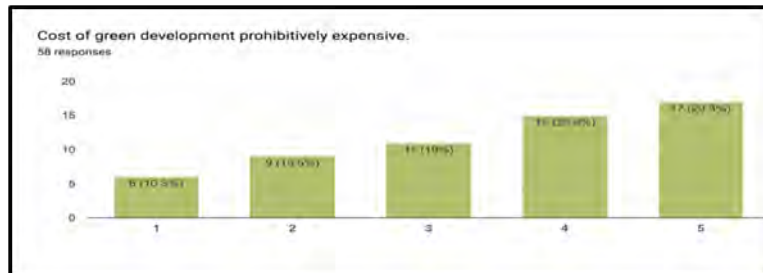


Figure 4: High Cost

Based on Figure 4, the highest percentage of respondents (29.3%) strongly agree that the cost of green development is prohibitively expensive, accounting for approximately 17 individuals. Next, 19.0% of respondents agreed with the idea that the cost of green development is prohibitively expensive, representing approximately 11 individuals. Lastly, the lowest percentage of respondents (10.3%) strongly disagreed with the notion that the cost of green development is prohibitively expensive, comprising approximately 6 individuals.

- Obstacles to Green Building Availability

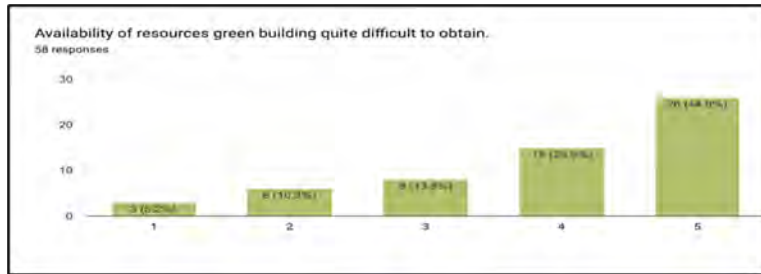


Figure 5: Obstacle to Green Building

Based on Figure 5, the highest percentage of respondents (44.8%) strongly agree that the availability of resources for green building is difficult to obtain, accounting for approximately 26 individuals. The next category of 13.8% of respondents were neutral with the idea that the availability of resources for green building is difficult to obtain, representing approximately 8 individuals. Lastly, the lowest percentage of respondents (5.2%) strongly disagreed, which was approximately 3 individuals.

- Lack of Incentives

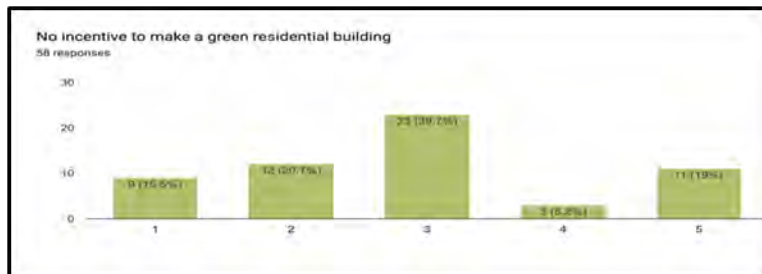


Figure 6: Lack of Incentives

Based on Figure 6, the highest percentage of respondents (39.7%) have a neutral stance regarding the presence of incentives to develop a green residential building, accounting for 23 individuals. Next, 19.0% of respondents agreed with this statement, representing 11 individuals. Lastly, the lowest percentage of respondents (5.2%) agreed with this statement, comprising 3 individuals.

- Lack of Government Concern

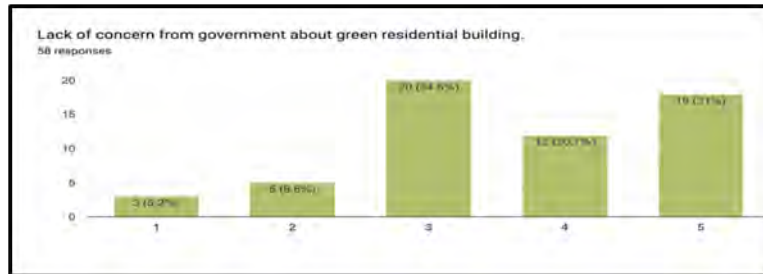


Figure 7: Lack of Government Concern

Based on Figure 7, the highest percentage of respondents (34.5%) are neutral that there is a lack of concern from the government regarding green residential development, accounting for approximately 20 individuals. Next, 20.7% of respondents agreed with this statement, representing approximately 12 individuals. Lastly, the lowest percentage of respondents (5.2%) strongly ..., comprising approximately 3 individuals.

- Difficulties to Properly Plan



Figure 8: Difficulties to Properly Plan

Based on Figure 8, the highest percentage of respondents (31.0%) agree with the idea that it is difficult to have a properly planned development, accounting for approximately 18 individuals. Next, 17.2% of respondents strongly agreed that it is difficult to have a properly planned development, representing approximately 10 individuals. Lastly, the lowest percentage of respondents (10.3%) strongly disagreed with this statement, representing approximately 6 individuals.

- Time Constraint

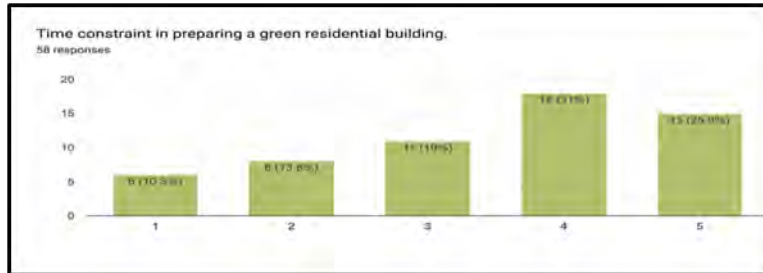


Figure 9: Time Constraint

Based on Figure 9, the highest percentage of respondents (31.0%) agree with the idea that there are time constraints in preparing a green residential building, accounting for approximately 18 individuals. Next, 19.0% of respondents were neutral regarding this statement, representing approximately 11 individuals. Lastly, the lowest percentage of 10.3% is made up of those who strongly disagreed with this statement, representing approximately 6 individuals.

- Lack of Subsidies

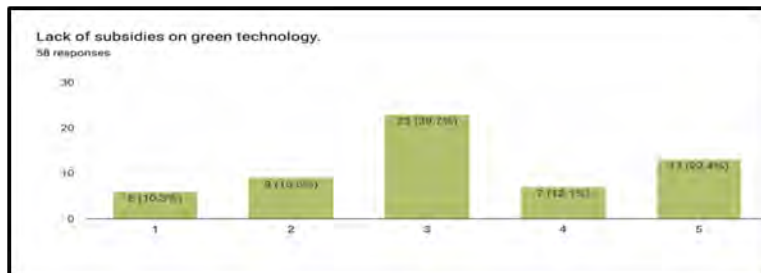


Figure 10: Lack of Subsidies

Based on Figure 10, the highest percentage of respondents (39.7%) are neutral regarding this statement, accounting for approximately 23 individuals. Next, 15.5% of respondents disagreed with this statement, representing approximately 9 individuals. Lastly, the lowest percentage of respondents (10.3%) strongly disagreed, representing approximately 6 individuals.

DISCUSSION

The barriers to green residential building development in Kedah need to be addressed to promote sustainable and environmentally friendly development practices in the region. First, there are several reasons why 51.7% of the sample, or the biggest percentage of respondents, had 3 to 10 years of work experience in the development industry. A possible reason could be that people with 3 to 10 years of experience have built up a significant amount of competence and knowledge in the industry. Moreover, the highest percentage of respondents, approximately 32.8%, strongly agreed that it is difficult to provide green residential development.

One possible reason for this observation could be the complexity and challenges associated with incorporating sustainable features and practices into residential projects. Green residential development often requires specialised knowledge, technical expertise, and additional resources compared to conventional construction, which could lead to perceived difficulties in implementation. Additionally, the biggest proportion of 27.6% of respondents, or 16 people, strongly agreed that there is no potential interest in buying green residential buildings. This attitude may be caused, in part, by ignorance about the advantages and worth of green home construction. The idea that there is no prospective interest among buyers may be influenced by a lack of informational exposure and misconceptions about the costs.

CONCLUSION

The analysis of the data revealed several reasons for the high percentages of responses in different categories related to green residential buildings in Kedah. These reasons could have stemmed from different factors, such as professional expertise, awareness levels, market perceptions, resource availability, and complexities in integrating green practices. Understanding these reasons can guide efforts to address current barriers, provide incentives, and foster the growth of green residential buildings in Kedah.

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