

Identifying the Challenges in Obtaining Green Building Index (GBI) Certification in Construction Industry

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Abstract

Green Building Index (GBI) was the first tropical green tool design in the world developed by PertubuhanArkitek Malaysia (PAM) and Association of Consulting Engineers Malaysia (ACEM). GBI is Malaysia's industry recognized green rating tool for building to promote sustainability in the built environment and raise awareness among the construction industry and the public. The purpose of this research is to identify the challenges faced during obtaining the certification of Green Building Index (GBI). This research isalsocarried out to examine the problem of process regarding Green Building Index (GBI) certification. A mixed approach of literature review with questionnaire surveys was applied to achieve the objectives. The questionnaires were distributed to private developers in the Klang Valley who are involved in green building projects. The results indicated that most of the respondents agreed that operating and capital budgets are costly to develop green building. Furthermore, it showed that the most common problems regardingGBI certification is to select the person most responsible for GBI certification. However, Malaysia is still new in implementing green building that can achieve the classification of the GBI certification.

*Keywords:*Challenges, GBI certification, Green Building Index (GBI), problems.

1.0 Introduction

Green building product is one of the important issues in the country and becoming increasingly ecco-savvy as they see the value in pursuing a green mindset and lifestyle. At the same time, it reduces building impact on human health and the environment during the building's lifecycle, through better sitting, design, construction, operation, maintenance, and removal.(Malaysia Green Building Index, 2013).

Ashighlighted by Schaufelbereger and Cloud (2009) in reviewing the green construction process and discussed the builder's role in design development, green subcontracting, green material procurement, documentation and commissioning, but did not discuss the developer's role in achieving specific points in green building systems and implementation.People in the construction industry are not aware of the environmental condition at the construction siteseventhough this was taught in every project. With the passion to obtain a GBI certification, they will be more aware about the environmental condition of the construction site. In addition, theylackknowledge about the process of obtaining a GBI certification and this gives a problem towards a sustainable building mission. (Thompson, 2007).

Green rating tools were conceived to assist architects, designers, builders, government bodies, building owners, developers and end users to understand the impact of each design choice and solution. By so doing, the final built product would perform better in its location whilst also reducing its harmful impact on the surroundings. The Malaysian Construction Development Board (CIDB) wrote to confirm their support for GBI Malaysia. A meeting was hosted by CIDB and on 2nd March 2009 to be briefed on GBI and further discuss how CIDB could assist in the promotion and development of GBI. CIDB offered their assistance to document the GBI to form part of their series of Construction Industry Standards (CIS). Options for incentives from CIDB were also discussed including also the part that QCLASSIC plays in the GBI.

The Green Building Index (GBI) is Malaysia's industry recognized green rating tool for buildings to promote sustainability in the built environment and raise awareness among Developers, Architects, Engineers, Planners, Designers, Contractors and the Public about environmental issues and our responsibility to the future generations. The GBI rating tool provides an opportunity for developers and building owners to design and construct green, sustainable buildings that can provide energy savings, water savings, a healthier indoor environment, better

connectivity to public transport and the adoption of recycling and greenery for their projects and reduce our impact on the environment. (Malaysia Green Building Index, 2013)

GBI is developed specifically for the Malaysiantropical climate, environmental and developmental context, cultural and social needs and is created to define green buildings by establishing a common language and standard of measurement; to promote integrated, whole-building designs that provides a better environment for all; to recognize and reward environmental leadership; to transform the built environment to reduce its negative environmental impact; and to ensure new buildings remain relevant in the future and existing buildings are refurbished and upgraded to improve the overall quality of our bulding stock. With the usage of GBI as a rating tool, the total number of buildings that qualify as green buildings can be identified (Malaysia Green Building Index, 2013).

This research is intended to reveal the key issues in the implementation and application for GBI certification. Challenges in executing this certification will boost the developers to obtain this great certification in order to achieve the National mission for sustainable and green buildings.

2.0 Literature Review

2.1 The Process and Implementation of GBI in Malaysia

i. Assessment Process

The process and implementation of GBIs starts from the assessment process, registration fees, GBI rating system, GBI rating tools and GBI classification. The assessment of green buildings has to show which would like to apply a certification for a new building. There are several steps to follow and comply with some regulations regarding GBI assessment. Basically the assessment process is built from 3 major steps, which are application and registration, design assessment and completion and verification assessment. Figure 1 shows the assessment process of GBI.



Figure 1: Assessment Process of GBI

ii. Registration Fee

Table 1: GBI Registration Fees. (Green Building Index Official Website, 2013)

Size of project	Total Gross Floor Area (m ²)	Registration Fees (RM)
Single Residence	Below 2,000	5,000.00
Small	Up to 4,000	8,000.00
Intermediate	4,001 to 10,000	10,000.00
Medium	10,001 to 30,000	20,000.00
Large	30,001 to 50,000	32,000.00
Extra Large	50,001 to 100,000	45,000.00
Mega Project	Above 100,000	Assessment fee will be determined on a project-by-project basis

As the GBI Registration Fees shows in table 1, charge is by size of each project. The fees include one time Design Assessment and Completion & Verification Assessment process. The rate shown is just valid for projects registered before the date of the next new rate is published. For appeal process, there is a flat rate of RM 1,000.00 chargeable at each credit point requested by the Applicant.

iii. GBI Rating System

GBI Malaysia rating system rate Green buildings based on the following six criteria: (Green Building Index Official Website, 2013):

- 1) Energy Efficiency
- 2) Indoor Environmental Quality
- 3) Sustainable Site Planning and Management
- 4) Material and Resources
- 5) Water Efficiency
- 6) Innovation

The six criteria above fulfil the objectives of GBI Malaysia and also the definition of Green Building. Although most of the rating systems also consider these six criteria but in GBI Malaysia it's scoring and the terms considered are set up by considering the local climate environment, development situation and also socio cultural scenarios in the Malaysian society.

iv. GBI Rating Tool

At present, GBI only developed two types of Green Building rating tool which are for Residential New Construction and Non-Residential New Construction. In future, GBI plans to launch an existing building rating tool since 26th April 2010 and will develop more tools for other aspects like town planning and etc.

At present stage, GBI develops separate tools for Residential and Non- Residential buildings. This is because Residential and Non-residential buildings have different functions and peak-use periods, thus for higher building comfort and efficiency, different tools are needed to rate the building (Green Building Index Official Website, 2013).

v. GBI Classification

GBI classed the rated buildings in 4 categories and it is valid for use in RNC and NRNC.

Table 2: Table of GBI Classification (Residential and Non Residential)
(Green Building Index Official Website, 2013)

Points	GBI Rating
86+ Points	Platinum
6 to 85 Points	Gold
66 to 75 Points	Silver
50 to 65 Points	Certified

2.2 The Challenges of Obtaining GBICertification Worldwide

Green Building Index (GBI) Malaysia was launched by the Minister of Public Works Datuk Seri Shaziman Abu Mansoron May 21, 2009 to set up a rating scheme to suit the local market. This Green building rating system was developed by Pertubuhan Akitek Malaysia (PAM) and the Association of Consulting Engineers Malaysia (ACEM). The objective is to lead the Malaysian building industry to becoming more environmentally-friendly and much adopted the idea of sustainable development. It is intended to promote sustainability in the built environment and raise awareness among industry players such as developers, architects, engineers, planners, designers, contractors and the public with emphasis on environmental issues. This rating system will guide developers to design and construct green, sustainable buildings with provisions for energy savings, water savings, healthier indoor environment, better connectivity to public transport and the adoption of recycling and greenery for their projects (Green Building Index Official Website, 2013).

The main objective of this research is to identify the challenges in obtaining Green Building certification. Understanding the obstacles to Green Building development will help find ways to promote the High performance Green Building market e.g., LEED, and BREEAM which are the world's successful labeling programs to provide helpful information and guidance on Green Buildings to the public. According to Olgyay (2004) the rating system and labeling programs are crucial to promote Green Building. Moreover, not all governments can do their job well to guide the market with transparent and updated messages and policies. The lacks of coordination or consistency in rating tools are holding back the interest of the potential stakeholders in Green Building.

Researches has shown that it is inefficient to let the building market on its own to absorb the cost for promoting

the idea of “green” or “energy efficiency”, due to the well-established economic theory of market. The Government plays an essential role in advocating this idea to the public. “Education” on the part of construction professionals, “awareness” on the part of the public, and “research and case studies” for innovative Green Building are the common issues brought up by both the practitioners and the academia. It was supported by Olgyay (2004) that the importance of these underlying issues will be investigated in the context of worldwide. The challenges in obtaining GBI certification are as below:

i. Operating and Capital Budgets

Riley (2006), said evaluation of running costs, methodological problem exist when attempting to compare the construction cost of conventional and green buildings on a like-for-like basis. Moreover, green buildings may indeed be less expensive than their conventional counterpart but may be significantly different in both concept and in terms of detail design. This may cause a problem of constructing a green building. This also has become a challenge for constructing a green building to get a certification from the agencies.

On the financial end, the critical issue that keeps coming up when dealing with clients is that most have funds appropriated for real estate acquisitions independently from funds for property operations. This separation creates an accounting scenario where the savings from operations of green buildings are not used to offset any initial higher construction cost. (Yellamraju, 2008)

The long-term benefits of initially more expensive construction are often not fully explored, and this frequently unwitting shortsightedness can ultimately cost a building owner a great deal. According to Yellamraju (2008), the most important things to understand is that a building’s initial construction cost typically may present only 20-30- percent of the building’s entire costs over its useful life, underscoring the need to consider not just the initial cost of the building, but also the year-to-year operating cost.

However, understanding the life-cycle costs of a building is still a significant challenge. Few tools exist to clearly illustrate the life-cycle analysis to the building owner, though it is expected to be included in the next rating system.

ii. Failure to recognize or accept environmental problems

According to Thompson (2007), construction can be substantial contributors to local and global environmental problems. He insisted that many people do not know or accept that these problems exist and their contributory role to overcome this issues. Consequently, they have no motivation to participate in the solution to these problems. For instance, most people have little or no knowledge about how their local ecosystem functioned before they were turned into buildings, parking lots, and lawns. People with lack of pre-degradation knowledge argue that even people living in degraded environment is healthy simply because they have never known a less degraded environment.

iii. Financial and Time Commitment

The desirable buildings give a high rate of return and a low void rate. With heightened awareness of green issues in today’s marketplace, this rating will soon become the norm for all commercial and domestic buildings. In order to get the certification, financial and time commitments are tremendously important and to fulfill the criteria that need to successfully achieve certification of Green Building. (Olgyay V. et al, 2004)

iv. Green Building Management issues

The management team is one of the challenges because it concluded that the higher quality internal environment created by the adoption of a green approach has led to a reduction in the level of absenteeism among staff within the organization. Riley (2006) has argued that average of six days sick leave per annum was recorded for the occupants of the green buildings as opposed to an average of 9-12 days for staff working in comparable posts but in conventional buildings.

v. Marketing and Investment considerations

A numbers of developers involved in the schemes appears to have found raising project funding either or more difficult due to the green nature of their developments. It is possible that in future however, speculative developers and indeed owner occupiers will be vetted as the major lending institutions come to expect

borrowers to subscribe to an environmental agenda. Organizations commissioning new buildings could it seems, be required to show that they are well managed, responsible companies who will protect the value of shareholders in investments. (Riley, 2006)

vi. Green Education

Green Education should be implemented in schools and universities so that awareness about green building will be raised. According to Yellamraju (2008), when children grow up in green schools and healthier environments, they naturally develop a sense of environmental responsibility and it becomes part of their way of life and the same could be true atuniversity level.

The challenges faced now are lack of knowledge in green building. The architectural and engineering education lack of emphasis on sustainable design. They need to encourage the development of technical skills such as energy simulation, passive solar and day-lighting design, and make them part of the way to design building. Doing so now will directly lessen the resistance change moving towards the future. (Yellamraju, 2008).

3.0 Methodology

Primary and secondary data by questionnaires will be compiled for analysis in this research. Thirty nine (39) questionnaires were distributed to private developers in the Klang Valley who were involved in green building development by hand and via post. Further, via fax and via email also are used to send the questionnaire to private developers for the purpose of getting the response on identifying the challenges to obtain a Green Building Index (GBI) certification. The top management, executive and professional in the company was selected for completing the questionnaire.

The collected data was then analyzed using the Statistical Package for Social Science (SPSS). The questions asked in the questionnaire are based on a Likert Scale. Likert Scale questionnaires require each respondent to rate a statement on a 4 point. Such as scale 1=strongly agree, scale 2=agree, scale 3=disagree and scale 4=strongly disagree. The method of Likert scale is applied in order to collect data to define the main challenges in executing GBI in Malaysian construction industry.

4.0 Findings

Table 3: The result of challenges in executing GBI (N=31)

Item No.	Type Of Challenges In Executing GBI	Mean	Rank
1	Operating and capital budgets is expensive compare to construction cost of conventional	3.77	1
2	Sources to finding material used in green building construction	3.58	2
3	Failure to recognize or accept environmental problems	3.48	3
4	Financial and time commitment	3.39	4
5	Marketing and investment project funding for green building development	3.35	5
6	Lack of knowledge about green education in Malaysian	3.29	6
7	Assessment process at every stage need to follow and comply to obtain GBI certification	3.19	7
8	Lack of awareness about green building initiatives	3.10	8
9	Management issues in organisation during implementation GBI	2.45	9

In the table above, it shows the result of factors to caused challenges in executing GBI from the developer’s perspective. These methods were ranked based on the mean value using descriptive statistic in SPSS software. Most of the respondents agreed thatoperating and capital budgets are expensive compares to the construction cost of conventional buildingswhichcould be affected by the challenges in executing GBIwhere the average scores are 3.77 which is supported by Riley (2006) and Yellamraju (2008). It is followed by the sources for finding materials used in green building construction (3.58). Failure to recognize or accept environmental problems is the most challenging factorin executing GBI. It is supported by the mean score of 3.48 which is among the highest value. The other factors contributing to challenges faced by developers are financial and time commitments (3.39) that are agreed by most respondents.

Table 4: Types of process problem regarding GBI certification (N=31)

Item No.	Type Of Process Problems	Mean	Rank
1	Select the person responsible for GBI certification	4.00	1
2	Identification of risk and the risk mitigation strategies	3.94	2
3	Difficulties while meeting all the key principles and criteria	3.55	3
4	Concerning about design and performance specification	3.53	4
5	Cost estimation and management of GBI	3.48	5
6	Cost of registration GBI	3.42	6
7	The process to obtain GBI certification	3.13	7
8	Knowledge and understanding Green Building performance and prolong building life span in Malaysian building industry are very low	3.03	8
9	Time to prepare for GBI documentation.	2.52	9

From the analysis, the result is found as shown in Table 4, the highest score 4.00 is to select the person responsible for GBI certification. Most of the respondents have agreed with the statement because that person has to be well aware of the GBI situation of the construction. In addition, that person also needs to know the level of GBI certification and the process of obtaining the certification. Further, identification of risk and the risk mitigation strategies became problems during carrying out Green Building projects. It is supported by mean score of 3.94 which is among the highest value. Difficulties while meeting all the key principles and criteria are also one of the problems faced by the developers regarding GBI certification. The mean score for this statement is 3.55.

The result from respondent shows that type of problem time to prepare GBI documentation is not a problem faced by developers. This is supported by data with the lowest mean of 2.52 where respondents felt that appropriate time to prepare the GBI documentation.

5.0 Conclusion

From the analysis, most of the respondents agreed that in obtaining GBI certification, operating and capital budgets are expensive compared to construction cost of conventional building. This increment will give effect to the client's budget. Moreover, client also had a challenge to get a certification from the related agencies. Besides that, it showed that the most problems regarding GBI certification is to select the person most responsible for GBI certification. The relevant person should be trained regarding GBI process and implementation in the construction industry. The designers need to develop their sustainable design knowledge and technical skills such as energy simulation, passive solar and day-lighting design. Apart from that, green education should be implemented in schools and universities. So the awareness about green buildings will be raised. It hoped that from this research, the total number of buildings that qualify as green buildings in Malaysia can be increased.

6.0 References

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