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Strategies Towards Green Building Index (GBI) Platinum Rating Among Developers

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Abstract: Green Building Index (GBI) is a rating tool provides an opportunity for developers and building owners in Malaysia to design and construct green, sustainable buildings that can reduce environmental impact from construction. However, the awareness and challenge for the developer to construct green building may influence the developer to get GBI platinum certification. In Malaysia construction industry, GBI standards is perceived as being too expensive for many developers. Out of the total 516 certification projects, only 20 projects get Platinum certification. The awareness is relatively low for the developers to implement suitable green technology to achieve Platinum certification. Their strategies apply to get the certification will affect the result of achievement. The objectives of the research are to explore the awareness of developer on green building projects, to identify the challenges for developer in achieving platinum rating of GBI and last to investigate the strategies of developer towards achieve platinum rating of GBI. The research was implemented by qualitative method which collects the data by interviews with 3 developers who involved green building GBI platinum certificated projects in Kuala Lumpur, Malaysia. After the interview session, qualitative content analysis method was using for this research. Through the data research, it shows that high investment cost implementation initially was one the biggest challenge faced by the developers to achieve Platinum certification. Most of the respondent agreed that hire expertise and adopting useful green technology can be the strategies to achieve GBI platinum certification. In the conclusion, the research help and encourage more developer and give the awareness to develop more GBI platinum certification green building in Malaysia.

Keywords: Green Building Index (GBI), Green Technology, Platinum Rating, Strategies.

1. Introduction

Sustainable construction is recently highlighted to reduce the greenhouse effect around the world. Green building is a chance to use our resources more efficiently while creating an ecologically balanced and healthier building (Diyana & Abidin, 2013). Green building will be assessed by the green rating tool call Green Building Index in Malaysia's industry. Green Building Index (GBI) in Malaysia is one

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of the rating tools available in the market and it was developed by Malaysian Institute of Architects (PAM) and The Association of Consulting Engineers Malaysia (ACEM) (Fauzi & Malek, 2013). According to Green Building Index Malaysia, 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.

1.1 Research Background

Green buildings present new challenges for developers: Environmental performance depends heavily on local context and the interaction of the different elements of the buildings to rapidly evolving accreditation criteria (Bertrand, 2010).

1.2 Problem Statements

The awareness of green building in Malaysia is still relatively low, less than two per cent of eligible projects are assessed with building rating systems such as the GBI, and even among those assessed, less than 50 per cent have been rated (CITP, 2016). The lack of overarching policies and regulations that require these ratings or assessments and is exacerbated further by the perception that 'green' is more expensive (CITP, 2016). It merely assesses how greenness of the buildings based on design and actual building lead to cause unknown to the green buildings in Malaysia whether there are performing as expected (Niig, 2016). Platinum rating is the higher building performance rating according to GBI Non-Residential Existing Building rating tool. Nonetheless it is true that GBI Platinum rating is indeed very difficult to achieve (GBI, 2019).

1.3 Research Questions

i. What is the awareness status of implementation green building among developer?
ii. What is the challenges face by the developers in achieving GBI platinum rating in their construction project?
iii. How the developers' strategies on trying to achieve the GBI platinum rating?

1.4 Research Objectives

i.To explore the awareness of developer on green building projects.
ii.To identify the challenges for developer in achieving platinum rating of GBI.
iii.To investigate the strategies of developer towards achieve platinum rating of GBI.

1.5 Significance of the Study

The purpose of this study is to fulfil several significant points which considered the important when referring the implementation of Green Building Index for commercial building. Developers will be more understanding on the implementation of green building rating tools in construction industry and understand the challenges of achieving GBI standard. Property buyers can understand the importance and benefit of investment in green building in Malaysia. Local authorities that can provide more support from varies aspects towards green guiding projects.

1.6 Scope of the Study

This study focusses on the developers with GBI Platinum rating building projects in Kuala Lumpur, Malaysia due to Kuala Lumpur have the highest registration number of Platinum projects in Malaysia (GBI, 2019).

2. Literature Review

2.1 Sustainable in Construction

Sustainable construction included the concept of social, ecological, and economic issues of a building in the context of its community and can be defined as operating and creating a healthy build environment based on resource efficiency and ecological design (Kibert, 2008).

2.2 Definition of Green Building

Green building refers to the full life cycle of the building, to maximize the conversation of resource, protect the environment and reduce pollution, providing people with healthy, suitable and efficient use of space, building in harmony with nature (Li & Yan, 2013).

(a) Benefits of Green Building

The benefits mainly divided into two broad categories, cost savings on running the business and new market opportunities. Major cost savings reported are like the ones reported for clients where benefits are gained from lower running costs (Abuzeinab *et al.*, 2017). Green buildings have a positive impact on the environment at the by generating their own energy, and reduce negative impacts on the environment, by using less water, energy or natural resources (WorldGBC, 2019). Green building also brings benefits to human health. Green building not only improve quality of life, but still can minimize strain on local infrastructure an improve occupant health and comfort.

2.3 Definition of Green Building Index (GBI)

Green Building Index (GBI) is Malaysia's industry recognised green rating tool for buildings to promote sustainability in the built environment and raise awareness (GBI, 2019) . GBI rating tools are developed to suit the Malaysian local climate, integrating the local building codes making it uniquely appropriate in the Malaysian context.

(a) GBI Rating System

Green Building Index in Malaysia did according to those specifications to have a rating system that suitable to use in local. The Rating system included Energy Efficiency (EE), Material and Resources (MR), Water Efficiency (WE), Indoor Environment Quality (EQ), Sustainable Site Planning & Management (SM) and Innovation (IN). Building that require to become green building may need to follow and achieve those standards with certain score.

(b) GBI Assessment Process

The GBI certification process starts with an assessment of the building design by a certifier appointed by Green building index Sdn. Bhd. GBI Assessment Process involve 3 stages, Application & Registration, Design Assessment (DA), Completion & Verification Assessment (CVA).

(c) GBI Rating tools

The GBI rating tools provided 14 categories of rating tools depend on each different types of building. Moreover, there are splitting into new project and existing project which request to be qualified green building. These tools included Non-Residential New Construction (NRNC), Residential New Construction (RNC), Non-Residential Existing Building (NREB), Industrial New Construction (INC), Industrial Existing Building (IEB), NRNC: Data Centre, NRNC: Retail, NREB: Data Centre, NREB: Retail, NRNC, NRNC: Hotel, NRNC: Resort, NREB: Hotel, NREB: Resort, and Township. Each of the different rating tools has different score point that need to achieve.

(d) GBI Assessment Process

According to the specific rating tools provided by the Green Building Index, project need to be scored a certain point to achieve certain level of GBI Standard. GBI rating divided into 4 standards which are Platinum, Gold, Silver and Certified. Point of Platinum rating is from 86 to 100 points, Gold rating is from 76 to 85 points, Silver rating will be 66 to 75 points while certified rating is from 50 to 65 points (GBI, 2019).

2.4 Green Building Awareness in Malaysia

Malaysia is not starting a new journey to sustainable development, but it is a process already in motion. The number of sustainable projects being built in Malaysia is moderate, indicating that construction practitioners are slow to understand the concept of sustainable development (Abidin & Jaapar, 2014). A most common obstacle to the development of green buildings in Malaysia is the lack of information on green products for high-performance building systems and this would leads developers to hire professional consultants if the developer aware on how important green building as a trend in Malaysia (Samari *et al.*, 2013). However, Since the existence of the Green Building Index eight years ago, people have come to realize these initiatives, especially developers and professionals (Tang, 2018). In conclusion, Malaysia trend of green building is increasingly but still needing the public to aware on green building.

2.5 Challenges of Green Building Implementation

While Green buildings provide a wide range of benefits to society, green building development suffers from different types of market barriers in developing countries including Malaysia. One of the challenges is low level of awareness and understanding on green home development among organizations. The level of awareness and knowledge among employees in their organization is low this is because only few employees who involved in projects incorporated with green design/features have knowledge and aware about green practice (Mohd Nordin, Halim, & Yunus, 2018).

The second challenge for implement green building is development for green building is costly. Moreover, the higher the green building star-level is, the higher is the incremental cost due to the evaluation project un different standards of green building rating, it will faced with different project evaluation requirements which will result in the differences of incremental cost (Li *et al.*, 2016). Participation of developer is using green building shows less interest and these proves that the current incentives that already introduced by government are not attractive enough for construction developer or owner in adopting green elements for their building projects (Hashim *et al.*, 2016) Malaysia is encouraging on using the green technology but its initiatives have yet to penetrate the small and medium enterprises (SMEs) or wield a strong influence on Malaysian consumers (The Edge, 2014).

In the other hand, to enhance the image of certified green building for long term is not easy. GBI-certified project records can help builders become leaders in the construction industry. However, according to GBI (2019), the validity of the GBI certification for the building last only 3 years, after 3 years. Management is also the factor affecting the implementation on green building technique in construction project. When the top management not concern to the environmental issues, the organization employees at lower management cannot influence much due to their limited power (Hasan & Zhang, 2016).

The awareness of green building will directly influence the implementation of green building in construction. When public does not concern or realize the important of green building, the demand is low, at the same time the supply from developer will also low (Hasan & Zhang, 2016). These are the challenges may affect the implementation of green building and influence the achievement in getting Platinum rating in GBI assessment.

2.6 Strategies to achieve GBI Platinum standard

Achieving GBI certification requires satisfying on all prerequisites and earning a minimum number of scores. To start on the process getting GBI certification, establish a certification goal. Set a clear direction for the organization on what goal is setting to let them achieve (Portalatin, Shouse, & Roskoski, 2019). Developer need to know where to work on to get the best and highest score to achieve platinum standard. To get platinum standard, the score must be above 86 points (GBI, 2019) and the part of Energy Efficient stand the highest rating with 35 point, if developer can work harder on designing best efficiency on energy they may have the higher chance to get much more points.

Furthermore, to get the suitable management on getting highest score on GBI, developer should hire the expertise on green building technique or train the construction team to have the proper design and strategy to achieve the criteria of the assessment. The expertise needs to be well understood on every criteria and assessment area that GBI focus on. While having a best team to design the most suitable green building system to the building, they must not forget to follow the guide of assessment of GBI. Do not mix up the criteria with the proper rating tools. Management team must implementation of the sustainability technology under discussion (Portalatin, Shouse, & Roskoski, 2019).

Green Building Index or other green building organization will always be having or organised talk in whole Malaysia to educate and gives their information on getting qualified green building with GBI. By participate their talks may let the employers from the developers having educate on specific criteria. By using the green technologies that adopt in the green building projects, it can helps efficiently in reduce waste pollution, as in GBI assessment for Material and Resources, is one of the main concern of the criteria (GBI, 2019).

3. Research Methodology

3.1 Research Flow

This research, were separated to 5 phases including Phase 1: Problem statement, Phase 2: Literature review, Phase 3: Data collection, Phase 4: Data analysis and result, and the last phase was conclusion.

3.2 Pilot Study

In a research, pilot study refers to either a trial run of the major research study or a pre-test of a research instrument or procedure (Salkind, 2010). Interview question has been drafted in advanced, then contribute with the respondents, after received the feedback from respondent, analysed the respondent feedback, then improvement has been done.

3.3 Data Collection Process

The first step for data collection was formed the literature review. Second, respondent target set in the area of construction developers that has been certified by the GBI. During the third interview questions were formed based on the objectives of the study. In the last data were collected in the written form by transcript the verbal information from the respondent.

3.4 Research Method

Research methods are tools that people use to conduct research. Qualitative method has been used in this study, as interview exclusive and interaction between the interviewer and interviewee subject in which both participants create and construct via narrative version (Marczyk, DeMatteo, & Festinger, 2005). Qualitative data show great diversity, they do not include counts and measures, but included any form of human interaction and communication (Gibbs, 2007).

3.5 Research Respondent

Convenience sampling is for members or units are selected based on availability (Neuman, 2014). In this research, the respondent will be selected based on the availability with 3 respondents from developers in Kuala Lumpur of GBI Platinum certified building projects as they participate in getting the certification may have more information about challenges and strategies to achieve (Marczyk, DeMatteo, & Festinger, 2005).

3.6 Research Tool

The study tools in this research were based on literature review, interviews, pilot test and data analysis techniques which are qualitative research data.

3.7 Data Analysis Method

Qualitative analysis method was used in this study. It has been used in content analysis which was the primary data (Interview result) compare with the secondary data (Literature review content) to analyse the difference and the similarities of each fact. According to Miles and Huberman (1994) suggest that analysis of qualitative data involve 3 stages: which is data reduction, data display and conclusion and verification.

4. Data Analysis and Results

This section focused on explaining and discussing on the findings of the awareness, challenges and strategies towards Green Building Index (GBI) Platinum rating among developers.

4.1 Respondents background

Table 1 illustrated respondents' demographics such as job position and years of experience of the respondents. Majority of the respondents involved in this research are in managerial level and have more than 5 years of experience.

Table 1: Respondent Background

Respondent	Project Name	Job Position	Year of Experience
Respondent 1 (R1)	Laman PKNS Office	Senior sustainable consultant	Less than 5 years
Respondent 2 (R2)	S11 House	Senior Manager	More than 5 years
Respondent 3 (R3)	Head Quarters of SP Setia	Project Executive	More than 10 years

4.2 Objective 1: To explore the awareness of developer on green building projects.

All the respondent agreed that developer should change the traditional construction approach to sustainable construction approach. Since sustainable construction approach can reduce in greenhouse effect and brings good impact to the climate and the environment. However, the source of awareness was different between them, this was shown in Table 2. Respondent 1 said, the green building projects is encouraging by government as it is the government building. Respondent 2 mentioned that, they will be using sustainable construction approach is because the housing project is one of their prototypes for their company project. Respondent 3 mentioned that they were one of the largest developers is Malaysia, so they need to enhance their image by adopting sustainable projects and play a role on promoting green building to the public.

The respondent indicated strongly agree and aware that sustainable brings advantages to the environment. By using renewable resources can save the environment as they can reduce the waste during construction. Most of the respondent agreed that green building technology can help to save for long run operation cost although the initial investment cost will be slightly higher. Respondent 1 mentioned, initially money is a lot needed to be invested in the project as the time we using solar tube is not cheap, but for long run the return of cost for the building is lower.

On the other hand, Malaysian awareness on green building is concept readily but they refuse to change a they have not sensed the importance of sustainable building and green building also did not enforce by government for the developer to develop sustainable building. Respondent 1 mentioned, the awareness was there and increasingly but the availability for the industry to invest in sustainable is not too high yet, laws and regulation to construct sustainable building is also very depending and not enforcement.

Table 2: Summary of the awareness of developers on green building project.

Respondent (R)	R1	R2	R3
Awareness of sustainable construction from developers	Encourage by government to develop sustainable government building.	As a prototype since that time GBI was just established and sees of the good contribution of sustainable construction.	Developers in Malaysia should practice in changing traditional construction approach to sustainable. Developers must practice their image.
Advantages of sustainable construction on environment	Contributes in reducing the usage of unrenewable material and reduce the usage of energy.	Reduce unrenewable resource and reduce waste pollution	By maintain the thermal comfort and indoor air quality to prevent too much energy generate.
Advantages of sustainable construction on economics	Initially need more money to invest, but for long run operation cost can be reduce.	When energy efficiency can be achieved, operational cost can be reduced although initial investment is higher.	Investment in green technology will be slightly higher but compare to the pass now is cheaper.
Public awareness in Malaysia	The awareness was there and increasingly but the availability for the industry to invest in sustainable is not too high yet	Do not think they are not concept ready since media in Malaysia is promoting.	Concept is readily accepting but cost selling of the property is not that common yet.

4.3 Objective 2: To identify the challenges for developer in achieving platinum rating of GBI.

Developers have the same opinion that if organization employee has the low level of awareness on sustainable building may influence the adoption in using sustainable construction technology. Lack of employee can bring out the concept to the management team about the benefits may lead to low implementation. Respondent 1 mentioned, they need to hire expertise form outsource to plan for the green building project implementation to get GBI platinum certification for the buildings. In Table 3 shows that, respondent 2 and 3 trusted that if the employee for the organization have the knowledge more developer will be convinced to go for sustainable.

High investment cost for implementation has been agreed by most of the respondent. Most of them mentioned that initially the cost will higher and need to wait for a long payback period. According to the respondent from Table 3 shows that, to achieve high achievement in GBI certification need to spend

more to get high efficiency on the technology. This is one of the major challenges by the developers. Respondent 2 mentioned the higher achievement need higher performance of the technology; this will increase the initial investment cost.

Based on the respondent opinion, they do not agree that government incentives not attractive is the challenge for the developers to achieve platinum certification. Since to get higher achievement in GBI assessment is based on the planning and government incentives does not influence much in the projects, they provide or not for the incentives will not a major concern for the developers to implement sustainable construction approach. Table 3 shows that R2 mentioned that MIDA provide claims for owner of the building, services like green consultant and assets like solar panels. But like the owner they may think the incentives is not more than what they invest on sustainable.

Maintaining long term green building image is just a minor challenge. From the Table 3, all the respondents have a same point of view, developers only need to maintain the effectiveness of the function of green technology so that they can contribute the same function when need to renew their certification. Respondent 2 said that "I am not agreeing with that as to continue having the certification, the owner need to maintain their system and asset to function well is enough."

However, unsupportive management may bring a major challenge for them to achieve platinum certification. All the respondents agreed with the statement. One of the respondents mentioned that, their client is cooperating with government, to get approval from the management team need to go law by law and one by one to reach the final decision. Some of the management may do not understand the contribution of each green technology that need to adopt. "They may not approve to adopt in certain decision may lead to a challenge to get platinum certification." Mentioned from respondent 1.

Public awareness may not directly influence the developer to get platinum certification. However, some of the respondent believe that if public awareness on the green building purchasing is low, the developer may not work hard to get platinum certification as for them it does not influence the public purchasing power. Table 3 shows that public awareness can create the demand and encourage developers to adopting sustainable construction approach. If the developers concern on the image, they may fight for platinum certification, if ones do not concern, they will not fight for platinum, certification from GBI. Respondent 3 mentioned that, to create awareness, they create a market and convince them to purchase.

In conclusion, the major challenge for the developers to achieve GBI platinum certification is the high investment cost, unsupportive management and employee low level knowledge on green building project.

Table 3: Summary of the challenges of green building implementation

Respondent (R)	R1	R2	R3
Low level of knowledge and awareness among employers in organisation	Employers level of knowledge is not major obstacle since they should be expertise like sustainable consultant to implement the sustainable approach.	It is important. When there is new project, employee with this knowledge can advise and persuade the management team to consider green building.	Yes, when the employee has this awareness of sustainable building, they will convince the management team to look for competent person.
High investment cost for implementation	Yes, convince the management people to adopt certain green technology is not easy as initially the cost is	It depends which kind of technology and material you use. But for sure to achieve more you need to pay for more.	As to achieve certain level you need to adopt certain technology and material, however the cost is still not

	slightly higher, when need to import new technology.		a major challenge as we can work within the budget.
Government incentives not attractive	Sustainable consulting firm can also get tax incentives but must be register the company after 2013.	They provide claims for owner of the building, services like green consultant and assets like solar panels. But like the owner they may think the incentives is not more than what they invest on sustainable.	As sustainable building still not enforce by the government with law and regulations, so at the same time the tax incentives will not be very comprehensive
Maintaining long term green building image	Not a big problem as they need to maintain their system in good function then they can register for renew and get the certification too.	What they have currently must function well when they going to renew the certification. It is not a major challenge.	For long term if our company maintain the system well and function the sustainable beyond the criteria, it is not a problem to enhance the image.
Unsupportive Management	Yes, as the project PKNS is government-based project, to go through government management is hard to get the decision soon and they may need more law-by-law paperwork to apply for the adoption of technology.	The management team was so supportive so the project surely will go smooth.	As one of the largest developers in Malaysia, they need to practice enhancing the image of the sustainable environment, so if got the supportive from top management, the work and plan will be going smooth.
Public awareness	Influence by market needs.	Demand will increase if public wants to be more sustainable since developer will construct based on public needs.	To create awareness, they create a market and convince them to purchase.

4.4 Objective 3: To investigate the strategies of developer towards achieve platinum rating of GBI.

To satisfying all the prerequisites and earning a minimum number of scores, developers need to have their own strategic to achieve their goal. This section will discuss the opinion of respondent regarding their strategies to achieve GBI certification.

First is goal setting by the team before construction. All the respondent agreed that the goal setting helps a lot and they did this before construction. They make sure they want to get Platinum certification and decided which kind of green technology can help a lot to get higher score in GBI assessment. Since the goal setting can be act as the guide for them to make any decision. Some of them mentioned that the early planning is very crucial. Referring to Table 4, Respondent 2 mentioned that goal setting is important to avoid waste, they must decide in the early stage, the goal setting is very important to lead the team score higher.

All the respondent support that it is important to focus on the highest score portion criteria. Since Energy Efficiency (EE) has the highest portion, all the respondents have the same point of view that they will use the highest energy efficiency green technology to achieve the requirement and score for it. Respondent 2 said that although EE should be focus more, but do not overlook other criteria like sustainable site management and planning (SM) that can be easily score with full marks.

The third strategy is to hire expertise like sustainable consultant that have competent knowledge on sustainable planning. Table 4 shows that this statement was agreed by all the respondent and they did hire those consultants to carry on the green building project. They really can help in score high marks in GBI assessment and at the same time they would also work in the budget. Respondent 3 said that, "Yes, we do get consult from the expertise like Dr. Tan from Greenscape, since they have the knowledge to implement those green approach."

On the other hand, to sufficiently get highest score in every criterion, adopting useful green technology can really help a lot. Adopting precise technology with specific building, it can help to maximize the energy and water saving, cut down the usage of construction resources and helps in score for platinum certification. From Table 4 one of the respondents mentioned that, different kind of building need to use certain technology only can function effectively. Addition, using green technology in construction can lengthen up the structural operations, maximize efficiency and reduce utilities usage and costs. By adopting the green technology wisely, the performance of technology in generating energy will be using sufficiently and get higher score in GBI assessment. Respondent 2 mentioned that, efficient green technology is required to get certification not only platinum, efficient and suitable green technology can sufficiently lead to high score on every criterion.

GBI programme also provided events and information to let the developer or participant to get higher score in the assessment. If the employees in the organization are qualified to apply for GBI facilitator programme and get the certification. Then they can contribute their knowledge to the green building project effectively. Respondent 3 mentioned that GBI also provide talks and events that provided latest information of the green building tendency. Table 4 shows all the respondent agreed that programmes and talk by the competent speakers from GBI give benefit to them in scoring Platinum certification.

Besides the strategies have been mentioned before, the respondent also gave some suggestion on how to get higher marks on GBI. Table 4 has shown that all the respondent suggested that the most important is to develop a suitable site initially since the site cannot be choose after construction works has been started. They should stick to Sustainable site management and planning (SM) requirement immediately if they planned to apply for GBI assessment to get platinum certification. Part of the respondents said Innovation will be not hard to get full marks. If developers work more than the requirements, the innovation marks will always be given in full marks as a bonus marks for the projects. Developers should also concern about what the material used in their projects. As in the criteria of Material Resources (MR) focus on environment-friendly materials sourced from sustainable sources and recycling. Developers should also focus on implement proper construction waste management with storage, collection and re-use of recyclables and construction formwork and waste. This can help much in score higher marks in the criteria. To prevent sick building, developers should take notes on Indoor Environment Quality since GBI focus in achieve good quality performance in indoor air quality, acoustics, visual and thermal comfort. These will involve the use of low volatile organic compound materials, application of quality air filtration, proper control of air temperature, movement and humidity. Developers if can work under the requirement s of the assessment, they will have the higher chance to get Platinum certification.

Table 4: Summary of strategies to achieve GBI platinum certification.

Respondent (R)	R1	R2	R3
Goal Setting	Every criterion they aim for full mark as a goal.	To avoid waste, they must decide in the early stage. Aim more than	Set a plan to get Platinum and work with the vision and mission.

		that will get to score higher marks.	
Focusing on highest score portion criteria and stick to requirement.	They focus on EE by using solar tube that can harvest more solar energy.	It really helps a lot but do not over focus on the highest part, should also focus equally.	Should be more concern for the largest portion marks.
Hire expertise	To have the most accurate suggestion and knowledge we should, and we do hire GBI facilitators to analyses the strategic of adopting sustainable technique	They need expertise and professional competent person like GBI facilitators, because they have the knowledge on it.	Yes, they get professional consultant to implement the project.
Adopting useful green technology	Can help to save more energy and get higher energy efficiency.	Efficient and suitable green technology can sufficiently lead to high score.	Helps to generate environmentally friendly energy and reduce waste pollution to the environment.
Participate GBI Programme	Need to participate for example like to course and exam to become GBI facilitator.	Participate the programme can get the latest information.	Get the latest information can avoid in making mistake. Training programme from GBI can help the company project to get more useful advice.
Suggestions	Work more is Site management (SM).	Work more in Site management (SM) and Innovation (IN)	Site management (SM), Material resource (MR), Water efficiency (WE) and Innovation (IN) can be score in not a very difficult way.

4.5 Discussion

(a) The awareness of developer on green building

The objective has been determined through the literature review and the point of views from the respondents. A conclusion on this objective can be made through the findings showed that, the developers aware of the sustainable construction approach, and know that green building approach can brings benefits to the environment and economics. However, not all developers in Malaysia are willing to change to sustainable construction approach. Since they just aware of green building but did not dive in understand and have the full knowledge on the importance to be green. The level of awareness of sustainable and green practices in Malaysian construction projects is still not satisfactory, it should increase response rates and progress to meet global standards (Bahaudin, et al, 2017).

Through the result from the studies, developers aware the advantages of being sustainable. Some of them willing to be sustainable is to enhance their developers' image, and some of them is based on promoting by the government. Objective 1 has been achieved.

(b) The challenges for developer in achieving platinum rating of GBI.

The challenge for the developers in achieving platinum rating had been determined. Through the finding it shows high investment cost is the major challenge that commonly faced by the developers. As if want to achieve higher GBI achievement, they need to spend more in adopting higher performance green technology to contribute in energy saving. it will be faced with different project evaluation requirements which will result in the differences of incremental cost. According to Li *et al.* (2016), the higher the green building star-level is, the higher is the incremental cost due to the evaluation project in different standards of green building rating

The second major challenge for the developers will be the unsupportive management. The green building construction adoption is influenced directly by the support from senior management (Hasan & Zhang, 2016). They will influence the adoption of green technology in every certain part of building since they will be influence by the cost in making decision. If the organization need complexity step to reach every stage of management, it takes a longer time and hard communication for the management team to make the decision. This would be a challenge for implementing the sustainable construction approach to get Platinum certification.

The third challenges are employees' low level of knowledge in sustainable construction in the organization to give essential advice. According to Abidin, Yusof & Othman (2013) without enough knowledge, information and understanding is a major obstacle to the success of sustainable buildings. Through the findings if ones in the organization with green building knowledge, they can suggest the team to go for green, but to get Platinum certification, the developers definitely need to hire sustainable consultant to get sufficient planning on their green building. This would be a challenge but not the main reasons developer could not get platinum certification.

A line with the findings and discussion, to enhance long tern green building certification image and government incentives is just a minor problem for them. It will not influence the developer to get platinum certification.

(c) The strategies of developer towards achieve platinum rating of GBI.

The strategies for the developers in achieving platinum rating had been determined through the discussion in this objective. According to the respondent point of view, goal must be set in the first day and must set higher than what they target to make sure they can successfully score higher marks in getting Platinum certification. It can also avoid any wastage in the future. Second, focus and score highest score for the highest portion marks for example Energy Efficiency (EE) can helps to score more to achieve platinum certification. To get platinum standard, the score must be above 86 points, and within the GBI assessment criteria, the part of Energy Efficient stand the highest rating with 35 point (GBI, 2019)

Hire expertise like sustainable consultant can helps the developer to achieve higher score in the green building projects. Sustainability advisers are being engaged by infrastructure proponents and they have knowledge in response to increasing drivers to achieve sustainability outcomes in project delivery (Scanlon & Davis, 2011). Besides, green building should adopt appropriate green technology to help in maximize the energy saving or performance sustainable well. This can help to get higher marks in the assessment and get platinum certification more effectively. The new environmentally green technologies are fundamental to attain sustainable development by reduce the amount of waste and pollution that are created during production and consumption (Samari *et al.*, 2013).

Participate with GBI programme can also help to get higher score on the assessment. GBI will always provide the latest information to the industry players to make sure they get up to date with how GBI works. Participate their talks may let the employers from the developers having educate on specific criteria. Last, most of the respondent suggest Sustainable site planning and management (SM) can helps

a lot to get higher marks if the location decided perfectly before construction. Marks will be easily given if the location is away for the protected forest and have high connectivity to the facilities around the building. Thus, objective 3 has been achieved with those strategies to achieve Platinum certification of GBI. Through the finding result on the strategies to achieve Platinum certification, all the respondents agreed that hire expertise and adopting useful green technology can help to achieve Platinum certification.

(d) Recommendation for Construction Industry

The main challenge for the construction industry to implement sustainable construction approach is the cost factors, as they think they need to invest high cost in implementing green building approach. The industry can list out one by one on the sustainable construction approach cost listing. At last, compare the cost to the traditional approach to see the difference on the cost. If they can understand the reality of the cost to implement the sustainable approach is lower than their expected, they may encourage to go green.

5. Conclusion

From the findings researcher had identified that current construction industry has the awareness on sustainable construction but there are step back because of thinking sustainable construction will be very expensive and not worthy to invest. Developer who achieve Platinum certification has spent slightly higher cost to invest in green building project that not as much as public think. Although there are some challenges in achieving Platinum certification of GBI like high investment cost and lack of knowledgeable employees, but when they hire the expertise like sustainable consultant, the respondent able to get reasonable price in spending in construction and have the competent knowledge helps them to achieve GBI Platinum certification.

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