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THE IMPORTANCE AND INVOLVEMENT OF LANDSCAPE ARCHITECTURE IN THE GREEN BUILDING INDEX (GBI) PRACTICE

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Abstract
This paper fundamentally discusses on the importance of the Landscape Architecture scope of works and professionalism in the application of the GBI. It sets out to investigate how the particular scope of works as well as the involvement of the Landscape Architecture professionals in the organization is being considered throughout the GBI practice. According to past researches, there are several professions that are mostly active in the green building and the GBI projects. The architects took the first place for the most involved and active profession during the design process of the green buildings followed by the mechanical, electrical, structural and civil engineers; the interior designers and the quantity surveyors. Based on that research evidence, inactive involvement of the Landscape Architecture professionals in the GBI practice is seen as an issue whereby in consequence, the landscape architecture professionals are not put in place together with other allied professions in the green building team. The study basically used questionnaire survey and semi-structured interviews, apart from secondary data collection obtained from the literature review and document analysis. From the evaluation of the survey and interviews, the study found that the Landscape Architecture is a very important field in the green building and the GBI development. It was found that the landscape design should be included from the very beginning of conceptual design stage in order to determine the right, sufficient and proper placement of the green areas. It also supported the role of the Landscape Architects as being important to be imposed in the GBI practice. Landscape Architects should be included in the green building design team to integrate the comprehensive knowledge of landscape design with other professionals in order to lead towards a multidisciplinary approach.

Key Words: Green Building Index, Landscape Architecture, Involvement, Importance, Professionals

1. Introduction

The green technology has become the most popular alternative that have been used by the developed countries such as United Kingdom, United States of America, Japan and many more. In regard to this technology, the idea of green building is introduced as a way of transforming the building market and transfiguring the common way of thinking about design, inhabit and operate buildings which is at the same time reducing the impact on environmental quality (United Stated Green Building Council (USGBC) News , 2005). Furthermore, according to the Green Building Index (GBI) fact sheet (2010), a green building focuses on improving the efficiency of resource use – energy, water, and materials – while reducing building impact on human health and the environment during the building's lifecycle, through better sitting, design, construction, operation, maintenance, and removal. The GBI is aimed to develop high performance buildings without causing any harm to the living things and environment. Therefore, the global demand on the green building is increasing from time to time due to its advantage in producing lower development risks (Ting, 2009; Larsson, 2010).

With the realisation that the built environment contributes significantly to climate change over the entire lifetime of all buildings, green building rating system was conceived in the 1990s to guide Built Environment professionals and end users on the impact of their choices to the environment. In recent years, Malaysia has been introduced to green building rating system originating from the United Kingdom, the United States, Australia, Japan and Singapore. However, a green building rating system by its nature is very dependent on the local environment, including climate, resources, current state of development and not to be forgotten, culture (Boon, 2009). Green building rating system is a very demanding system that provides variety of

privilleges and bonuses to the development and construction sector. It is essential because it is a great tool to exhibit environmental stewardship. It also enables the public to learn deeply about green buildings (Cruz De La Cruz, 2008). Green rating system also (Tan, 2009) by its nature and role is very dependent upon location and environment and thus climate. Hence, taking the advantages of having green building rating system, Malaysia has made a step further by adopting the Green Building Index (GBI) as the first local green rating building sytem. Boon (2009) mentioned that the GBI is a profession driven initiative to lead Malaysia towards a more responsible built-environment, for now and for the future. As aforementioned, the GBI is a green rating system for buildings developed by Pertubuhan Arkitek Malaysia (PAM) and Association of Certified Engineers (ACEM). It was introduced in 2009 by the Honoured Senator Penny Wong, a Malaysian who is now Australia's Water and Climate Change Minister (Chin, 2009). As a result from being too dependent on the foreign green benchmarking system over the years, the GBI is emerged to help in evaluating the environmental design and performance of the Malaysian buildings.

In the green building development as well as the GBI practice, the involvement of the allied Built Environment professionals as the green building team is very important. The green building team which includes the design team should be able to demonstrate their experiences in technical qualifications pertaining to green building projects (GGGC Draft, 2003). Furthermore, the team shoud have an excellent track record based on the past projects which outstand their ability in optimizing the design and environmental performance of all aspects in the green building projects. Hence, selecting the right team is considered as an important aspect to the success of any construction or green building projects (Mahesh et al., 2007). The optimal selection of the right team should take place before a project is started as this will contribute to a greater opportunity of the team's success (Paul and Carr, 2002). The development projects today require the involvement of a team of people with a range of relevant experience (Mohamed S. Elforgani & Ismail Rahmat, 2010). Therefore, the involvement of these kinds of professionals and experts in the green building area is very vital in order to showcase and promote the niche and needs of having this new area of interest.

According to Mohamed S. Elforgani and Ismail Rahmat (2010) in their past research, there are several professions that are mostly active in the green building and the GBI projects. The architects took the first place for the most involved and active profession during the design process of the green buildings then followed by the mechanical and electrical engineers at the second place. Meanwhile, the structural engineers, the civil engineers, the interior designers and the quantity survivors are among the third professions that are most involved in the green building process and the GBI application and practice. This is also supported by Paul and Carr (2002), the team may consist of the following consultants: the architects, the land surveyors, the structural engineers, the electrical engineers, the mechanical engineers, the hydraulics engineers as well as the quantity surveyors. However, based on the research evidence above, it can be seen that, the landscape architecture professionals are not put in place together with other allied professions in the green building team. If it can be looked into the current GBI organisation, it can be assumed that most of the professionals that have an attachment to the organisation are the architects and the engineers (GBI Fact Sheet, 2010). In totality, it can be said that the Landscape Architecture professionals are inactively involved in the green building and the GBI practice. Thus, this research would like to explore the base of this issue and the aspects that might contribute towards this matter as well as to find several proper solutions or recommendations that may fix this arising issue. By the help of the research objectives which are to examine the importance level of landscape architecture in the GBI, to identify the significance of landscape design in the context of the GBI application as well as to recognize the roles and contributions of landscape architecture in the GBI practice, it is hoped that this research will eventually meet the primary aim of the whole research.

2. Landscape Architecture In The Context Of The GBI

Green building design has always to deal with the environmental sustainability. In order to sustain the environment, the natural resources and landscapes should be remained untouched. However, most of the developments nowadays have far astray from the actual sustainable development principles. This is the reason of why landscape architecture is very important in realising the concept of green building. As mentioned by the president of Institute of Landscape Architects Malaysia (ILAM), landscape architecture is a vital field to educate the current generation on the preciousness of the environment. Humans nowadays are greedy and irresponsible by altering the natural land resources for development without noticing their impacts towards the ecology and environment (Noor Fazrina Kamal, 2011). Therefore, landscape architecture been incorporated as a major part and parcel from the overall GBI assessment through the criteria of open spaces, landscape design and heat island effect.

2.1 Open Spaces, Landscape Design and Heat Island Effect

Referring to the GBI assessment sheets, it has outlined several important aspects such as the intent of the assessment, the description of assessment as well as several requirements to be fulfilled in order to achieve highest points during the assessment. The details of them are shown as follows:

i. **Intent of the assessment:** to conserve existing natural area or create larger soft landscaping area to provide habitat, promote biodiversity and reduce heat island effect.
ii. **Descriptions of the assessment:** encourage protection or restoration of the habitat and maximise the ecological diversity by introducing native or adaptive vegetation as well as maximise potential for open spaces on grade or on rooftops.
iii. **Specific requirements:** maximize open spaces by providing a high ratio of open space to development footprint to promote biodiversity & reduce Heat Island Effect:
    a. 1 Point: provision of landscaping with indigenous plants is up to 10% of total development area;
    b. 1 Point: landscaping with indigenous plants is up to 15% of total development area;
    c. 1 Point: landscaping with indigenous plants is up to 20 % of total development area; and
    d. 1 Point: landscaping with indigenous plants is up to 25% or more of total development area.

Comprehensively, the important input that should be carried out in this assessment will be as follows – the development should have smaller footprints and more landscape, thereby reducing the well-known effects of heat islands around hardscaped areas. The provision of landscape with indigenous plants up to 10% of total development area will be awarded 1 point and the provision of additional similar landscape and plants of every extra 5% will be awarded 1 point each up to a maximum of 3 points.

From the elaboration above, it can be seen that landscape architecture plays very important roles in achieving the objectives of green building design. The intention of conserving natural lands, enhancing biodiversity and reduce the impacts on the earth are the roles that landscape architecture holds since the beginning of the world civilization. All the requirements and details outlined for this section need to be further improved by the help of the professional landscape architects. This is the right platform to implement everything that has been outlined in any official landscape guidelines and standards in improving and detailing the current landscape requirements in the GBI assessment. Indirectly, the development of the GBI has opened a path for the landscape architecture professionals to bring their profession to a better standard and it is a new innovation that could be implemented in landscape architecture. On the other hand, this new innovation also could demolish the sceptical stigma towards the landscape architecture profession which saying that it is only about plants and decoration; but the reality is it has to do with so many things else which may contribute to the betterment of urban environment (Dzul Hardy Azwar, 2005; Noor Fazrina Kamal, 2011).

3. Roles Of Landscape Architects From Islamic Points Of View

Venturing into the 21st century, the world is confronted with more and more serious challenges on managing the environment as it forces everyone to see things in a larger perspective especially the landscape architects. They play big roles; not merely as the steward of the earth but more than that. They are prepared and trained to manage and treat the environment in a sustainable manner in order to ensure the better quality of life (Ismail Ngah, 2007). This is in line with the teachings of Islam which educate Muslims to protect and preserve the environment. As mentioned by Sheikh Khalifa Ezzat (2008), Islam is the greatest religion and it is a way of life. Islam teaches human beings to respect the environment by conserving it for several reasons as follows:

i. The environment is Allah's creation. The creation of this earth and all its natural resources are a sign of His wisdom, mercy, power and His other attributes and therefore serves to develop human awareness and understanding of this creator (Surah Ar-Ra`d: 2-4);
ii. Muslims should protect and preserve the environment because it is the sign that they protect another Allah's creatures which pray to Him and praise Him. Humankind might not be able to understand how these creatures praise Allah but humankind must believe in it. As Allah says, “The seven heavens and the earth, and all beings therein, declare His glory: There is not a thing but celebrates His praise, and yet ye understand not how they declare His Glory!” (Al-Israa’: 44); and
iii. The environment contains Allah's creatures which the Muslim scholars consider to also deserve protection.

There is obviously a serious need to heal and care for the environment, where the landscape architects in particular, must play proactive role by reviewing their contribution to the environment and society and find ways to address the environmental issues. Indeed, landscape architecture in Malaysia has proven itself today as an essential and indispensable element in the design, planning and implementation for a better quality of life and management of built environment industry. Moreover, it also has a significant contribution in creating

conducive habitats for the sustenance of civilization. The landscape architects has so far been successful in greening the Earth by developing greens for the communities, as well as putting efforts to increase people's awareness and perception towards a balanced landscape within the present rapid development scenario (Ismail Ngah, 2007). The landscape architects task is not easy as they are trained to protect the right of nature over human and vice versa. Mohamad Fadly (2009) mentioned that the holy Qur'an has stressing a lot about nature, its damages and the way of protecting its rights. This can be seen from several Qur'anic and Hadith verses as follows:

i. All the damages on earth are caused by the actions of human themselves. This is proven by the verse in the 30th chapter which says, "Mischief has appeared on land and sea because of the hands of men has earned, that (Allah) may give them a taste of some of their deeds: in order that they may turn back (from Evil)";
ii. God created nature in a perfect balance among all its factors, that human must keep that balance. This is proven by the 19th verse in Surah Al-Hijr which says, "And the earth We have spread out (like a carpet); set thereon mountains firm and immovable; and produced therein all kinds of things in due balance";
iii. Prophet Muhammad encouraging all members of Islamic community to spread the trees and reclaim the desert lands. This is proven by his sayings in Sahih Al-Bukhari, "There is none amongst the Muslims who plants a tree or sows seeds, and then a bird, or a person or an animal eats from it, but is regarded as a charitable gift for him".

On the other hand, the Qur'anic verses sayings of the Prophet also continuously reminding the Muslims to keep the resources of nature and to use them in a balanced way as well as avoid from mischief and extravagance. This can be seen in several verses which are:

i. Men should keep the earth resources wisely and not to waste them. This is mentioned in verse 26 and 27, Surah Al-Isra' which says, "But squander not (your wealth) in the manner of a spendthrift. Verily spendthrifts are brothers of the Evil Ones; and the Evil One is to his Lord (himself) ungrateful";
ii. Men are inhibited to waste the products of nature. This is proven by the verse 141 in Surah Al-An'am which says, "It is He Who produceth gardens, with trellises and without, and dates, and tilth with produce of all kinds, and olives and pomegranates, similar (in kind) and different (in variety): eat of their fruit in their season, but render the dues that are proper on the day that the harvest is gathered. But waste not by excess: for Allah loveth not the wasters".

Overall, nature and environment can be regarded as a very important component in human lives and the landscape architects are responsible to care and manage them sustainably. Islam also really cares about the idea of protecting the environment by teaching the Muslims on how to respect nature; keep the natural resources wisely away from misuse and extravagance; increase the amount of plants and trees; as well as protect the lands. This is also supported by Zaini Ujang (2010) by saying that the idea of keeping the trees alive should be comprehended by the men as it is closely related to the divine philosophy. He further said that the initiative to protect the environment and the ecosystem in providing a safer living place for the community is a medium for Muslims to increase the *iman* or faith to Allah SWT.

4. Methodology

4.1 Research Design

This research emphasized on the exploratory research approach. According to Babbie (2002), exploratory research is typically occurs when a researcher examines or investigates new interest or when the subject of research itself is relatively new. In relation to this research, the Green Building Index (GBI) is a kind of new interest or area occurs in the Built Environment field. Based on the determined research approach as well as the formulated research objectives, several methods were used to collect primary and secondary data for this research. For primary data collection, the methods used were questionnaire survey and semi-structured interview. The questionnaires were distributed and handed to the respondents face to face. The respondents were selected from the professional group who are working in Built Environment field such as architects, landscape architects, engineers, urban planners, academicians, quantity surveyors and others. These people were selected as the target respondents as they may probably acquire any knowledge and information related to the application of the Green Building Index (GBI) in Landscape Architecture scope of works. On the other hand, the interview sessions have been conducted with several selected key persons from Built Environment field who involved

primarily in the GBI application as well as Landscape Architecture field. For secondary data collection, the methods used were literature review and document analysis.

4.2 Research Population and Sample

The target population selected consists of the professionals in the Built Environment industry. This professional group may consist of the architects, landscape architects, engineers, urban planners, quantity surveyors, academicians and other related professions. From this large size of population, the sample has been selected as the representative for the whole population by using sampling technique.

4.3 Sampling Technique

The selected sample for this research was determined by simple random sampling technique. Simple random sampling will make each unit in the population has an equal chance of being selected (Menter, et.al., 2011). In relation to this research, questionnaires were divided and distributed randomly to any institutions, firms and companies that have been approached by the researcher. The selected institutions may consist of different professionals from government and private sector in Built Environment industry, be it architects, landscape architects, engineers, urban planners, academicians, and quantity surveyors have the same chance to be the respondents. Eventhough they were selected randomly, they were the most probable sample who may acquire some information pertaining to the scope of research. However, from the total distribution, only 100 questionnaires were being taken for further analysis. According to Cohen, Manion and Morrison (2000), the researcher should obtain at least 100 responses in order to have valid and reliable results. After obtaining the target response rate, the collected data or responses has been further analysed by using several methods of analysis.

4.4 Methods of Analysis

For this research, the questionnaire survey data was analyzed by using the Statistical Package for the Social Science (SPSS) version 17.0 software. According to Zaidatun Tasir and Mohd. Salleh Abu (2003), the SPSS is a user-friendly software that can be used to perform statistical analysis and graphical data management. After all the data have been entered into the database, they were analysed by using descriptive analysis and inferential analysis. The descriptive analysis was used to showcase the frequency distribution, percentage distribution and some other distributions of the collected data. For the inferential analysis, parametric tests were used to test the relationship of the variables.

Moreover, the interview data was analyzed by using qualitative software, QSR NVivo Version 8. NVivo is a qualitative data analysis (QDA) software package that has been designed to simplify the process in managing, transcribing and analysing qualitative data (Dayang Hajjah Tiawa, Abdul Hafidz and Rio Sumarni, 2005). By using this software, the audio recordings from the interview sessions were imported as transcription media which then being converted to text responses. After the transcription process is done, the transcript can be coded into the desired node. Node is the term used by NVivo to represent a code, theme, or idea about the data that the researcher wants to include in. After the coding process, the researcher may extract the best information to be reported as results and findings for the qualitative data.

5. Research Findings

5.1 Demographic Profile of Respondents

Table 1 below presents the results of demographic characteristics of the respondents ranging from the personal background up to the personal knowledge and experience.

Table 1: Demographic Profile of the Respondents

Items		Respondents (N=100)	
		Frequency (F)	**Percentage (%)**
Gender	Male	43	43.0
	Female	57	57.0
	Total	**100**	**100.0**
	20-29 years	43	43.0

Age	30-39 years	42	42.0
	40-49 years	10	10.0
	50 years and above	5	5.0
	Total	**100**	**100.0**
Academic Qualification	Diploma	10	10.0
	Bachelor's Degree	68	68.0
	Master's Degree	18	18.0
	PhD	4	4.0
	Total	**100**	**100.0**
Working Experience	Less than 5 years	46	46.0
	6 to 10 years	29	29.0
	11 to 19 years	17	17.0
	More than 20 years	8	8.0
	Total	**100**	**100.0**
Job Positions	Architects	27	27.0
	Landscape Architects	17	17.0
	Engineers	10	10.0
	Urban Planners	10	10.0
	Quantity Surveyors	8	8.0
	Academicians	10	10.0
	Others	18	18.0
	Total	**100**	**100.0**
Familiriaty Towards the GBI Rating System	Yes	95	95.0
	No	5	5.0
	Total	**100**	**100.0**
Experience in Dealing With the GBI Projects	Yes	50	50.0
	No	50	50.0
	Total	**100**	**100.0**
Proper Knowledge and Expertise in Assessing the GBI Projects	Yes	34	34.0
	No	66	66.0
	Total	**100**	**100.0**
Attachment in the GBI Organisation	Yes	16	16.0
	No	84	84.0
	Total	100	100.0

Based on the table above, the respondents involved were 57.0% females and 43.0% males. Most of them belonged to the 20-29 years (43.0%) and 30-39 years (42.0%) age groups. On the other hand, more than half of them have Bachelor's Degree (68.0%) and only few have Master's Degree (18.0%). By profession, most of the respondents were architects (27.0%), followed by others (18.0%), landscape architects (17.0%) and equally distributed (10%) between engineers, urban planners and academicians. Almost half of them have worked for less than 5 years (46.0%) and quarter of them has worked within 6 to 10 years (29.0%). In terms of the familiarity towards the GBI rating system, most of them (95.0%) were very familiar with the system. Half of them have good experience in dealing with the GBI projects meanwhile another half have no experience at all. Furthermore, more than half of them did not have proper knowledge and experience in the GBI assessment (66.0%) and more than three quarter of them did not attached or registered to the GBI organisation (84%).

5.2 Level of Importance and Involvement in the GBI Practice

Table 2 below presents the results of the professionals' knowledge and expertise in the GBI practice.

Table 2: Level of professionals' knowledge and expertise in the GBI

Which professionals have the best knowledge, expertise and involvement in the GBI application and practice?	**M**	**SD**
Architects	4.31	0.873
Landscape architects	3.65	0.968
Engineers	4.06	1.023
Urban planners	3.44	1.018
Quantity surveyors	3.30	1.040
Total	3.75	0.984

Note. = M- Mean, SD- Standard Deviation

Based on the above table, it can be said that most of the respondents agree that the architects and the engineers have the best knowledge, expertise and involvement in the GBI practice. This is indicated by the high mean score = 4.31 for the architects and 4.06 for the engineers. Then, it is followed by the landscape architects with mean score = 3.65, the urban planners = 3.44 and the surveyors = 3.30. According to the results, approximately each of the professionals do have knowledge, expertise and involvement in the GBI but only the architects and engineers performed better in this particular item. Based on the total mean score = 3.75 and standard deviation = 0.984, it indicates that the professionals knowledge, expertise and involvement in the GBI practice can be rated as at medium level. Therefore, the GBI organisation should give an attention towards this matter in order to create balance knowledge widespread among the Built Environment professionals regarding the GBI application and practice. Not just that, the professional association like ILAM should also play its roles to be more active in dealing with the green initiative bodies, bond an attachment with them and educate its members about the importance of knowing and experience the green building projects.

Moreover, Table 3 below presents the results of the professionals' involvement in the GBI practice.

Table 3: Professionals' involvement in the GBI practice

Which professionals are mostly involved in the GBI practice?	**Percentage (%) and Frequency (F)**		**Total**
	Yes	**No**	
Architects	91.0 [91]	9.0 [9]	100
Landscape Architects	41.0 [41]	59.0 [59]	100
Engineers	58.0 [58]	42.0 [42]	100
Urban Planners	23.0 [23]	77.0 [77]	100
Quantity Surveyors	19.0 [19]	81.0 [81]	100

Note. = Frequencies appear in parentheses below percentage.

Most of the respondents agree that the architects (91.0%) are among the professionals who mostly involved in the GBI practice. This is followed by the engineers with 58.0%, the landscape architects with 41.0%, the urban planners 23.0% and the quantity surveyors at the most bottom with 19.0%. From the overall view, it can be said that most of the respondents think that the architects and the engineers are the professionals that mostly involve or participate in the GBI practice. This is based on both scores which have exceeded more than half on the agree responses. Most probably, the respondents may have the view that the GBI is under the subsidiary of PAM and ACEM; the two organisations which are related to the architectural and engineering professions. Thus, both of these professionals might have good exposure about the GBI and its entire projects as compared to the rest of the professional groups. It could a reliable reason on why they chose these two professions as the professional who are mostly involved in the GBI practice.

Moreover, Table 4 presents the level of importance of the landscape architects' involvement in the GBI practice.

Table 4: Level of importance of landscape architects' involvement in the GBI

Do you think that the landscape architects are important to be involved in the GBI practice?	**Frequency (F)**	**Percentage (%)**
Yes	93	93.0
No	7	7.0
Total	100	100.0

Based on the above table, it can be seen that 93.0% of the respondents agree that the landscape architects are important to be participated in the GBI practice meanwhile only 7% are against it. This is most probably because the respondents think that landscape architecture may contribute to the development and execution of the green building works not only for outdoor aspect but also indoor aspect. This could be a valid reason on why they supported that the landscape architects to play a part in this new area of interest in the Built Environment field.

Besides the questionnaire survey, the information was also gathered through the interview session. The interviewees were asked about the current involvement of the Landscape Architecture professionals in the GBI. Most of them agree that the current involvement of the landscape architects is less in the green building and the GBI. According to an interviewee, at the moment, there was none of the GBI facilitators are coming from the Landscape Architecture background. They supported that the landscape architects should involve from the very beginning of the design stage; not only come in when the building has been completed. An interviewee mentioned that there is a new proposed act as abovementioned. This act may help in enforcing the landscape architects to come together at the preliminary stage of design and development. However, quite a few of the interviewees have listed down the problems of the landscape architects regarding this subject matter. Most of them supported that the landscape architects have not very contributing in the green building development and the application of the GBI because they did not understand the whole concept of the green building and also the GBI application. Furthermore, the landscape architects do not have the ability to convince people especially the clients and they are not articulate to argue because they do not have sufficient knowledge, data and facts. Besides, another interviewee mentioned that the landscape architects did not have the effort to promote themselves in the green building field. The landscape architects in Malaysia are not innovative in selling their design ideas and they just want to make quick profit by selling the mediocre design. Furthermore, the landscape architects have not thought beyond their scope of works. However, another interviewee believed that the less involvement of the landscape architects in the green building and the GBI practice may occur due to several reasons. It is maybe due to the fact that the landscape architects themselves are not insist to involve; or maybe the situation hinders them to do so; or it maybe occur due to the fact that the other professions are really confine into the idea that landscape design is only about plants. The landscape architects are rarely being called in the earlier stage of the development even during the initial phase of the GBI itself. Thus, the landscape architects might face some problems because at that particular stage, the landscape architects were already being left out.

5.3 Landscape Design Consideration in the Context of the GBI

Landscape architecture is said to be very important in the context of green building and the GBI application by the respondents. It is found that most of the respondents agree that landscape design should be included from the very beginning of conceptual design stage in order to determine the right, sufficient and proper placement of the green areas. The landscape architects should involve from the very beginning of the design stage; not only come in when the building has been completed. In fact, there is a new proposed act which called as 'Landscape Development Act' that may help to secure the Landscape Architecture scope of works and the landscape architects role in this field. Furthermore, the respondents have been addressed about the possible consideration that should be taken in the aspect of landscape design in the context of the GBI practice. Table 5 below presents the results as follows:

Table 5: Landscape design consideration

No.	Item	M	SD
1.	The significance of landscape architecture scope of works should be more emphasized in the GBI practice.	3.83	0.954
2.	Extra inputs on landscape design criteria in the GBI should be highlighted in order to give clear knowledge to the designers, facilitators, assessors as well as the GBI applicants.	4.04	0.931
3.	A detail reference on the sustainable plant materials selection should be outlined in the GBI criteria to let other professionals and clients know about their aesthetics and functions.	3.95	0.892
4.	The method of calculation for the provision landscape design area to the total development area should be included in the GBI design guidelines.	4.04	0.864
5.	The standards, guidelines and policies outlined by the authorized landscape bodies such as National Landscape Department are very essential to be included in the GBI criteria.	4.02	0.887
Total		3.98	0.906

Note. = M- Mean, SD- Standard Deviation

Based on the mean scores of each item, it is found that there are 3 preferable consideration chosen by the respondents. With high mean score = 4.04, they believed that extra inputs on landscape design criteria in the GBI should be highlighted in order to spread better knowledge about landscape architecture to the green building or the GBI team. They also supported that a specific method of calculation for the proper provision landscape design area to the total development area should be included in the GBI design guidelines (mean score = 4.04). The respondents also agreed that the standards, guidelines and policies outlined by the authorized landscape bodies such as National Landscape Department are very essential to be included in the GBI criteria.

Eventhough the mean score is slightly lower, another 2 considerations can be considered as fairly important by the respondents.

5.4 The Roles and Contributions of Landscape Architecture in the GBI Practice

In the aspect of the roles and future contribution of the landscape architecture professionals in the green building as well as the GBI application and practice, there were some suggestions that have been roped in. The building developers should be aware that they should hope in the landscape architects from the very beginning of the projects as they may help the architects in providing the strategies to incorporate the landscape design into the green buildings. This is because the Built Environment industry is leading towards multidisciplinary approach. Since there is quite less landscape architects in the green building development, the landscape architects' role should be taken into the project from the very first phase. Furthermore, the landscape architects themselves should see the green building as their responsibility; not a competition. They also must have a strong ability to convince the other professions that the green building is the area that maybe they can contribute. Regardless how big or small the contribution is, the landscape architects still have a role to contribute in the overall green building projects. The most important thing is they need to think and go beyond their comfort zone and try to bring a fresh and extraordinary idea to be incorporated in their design. They also may contribute a lot by having an attachment to the GBI organisation or becoming the GBI facilitators. There were also some suggestions that the roles of the Landscape Architecture association or bodies such as Institute of Landscape Architects Malaysia (ILAM) are very important in encouraging the involvement of the landscape architects in the green building and the GBI practice. By having a liaison with PAM and ACEM, these bodies may encourage their members to attend the trainings, courses, workshops and info sessions that are related to the green building and the GBI itself. Another thing that can be done is through the regulation. If the government decided to make green building as the mandatory requirement, they need to suggest that the landscape architects should go into this green building area. This is very much related to the proposal of the new Landscape Architecture policies which are Landscape Policy, Landscape Development Act and also Landscape Architects Act. The Landscape Development Act is a guideline where certain areas should have the mandatory landscape architecture inputs. Thus, it is good in order to enable the landscape architects to play their roles. It spells out about the Landscape Architecture scope of works which indirectly securing their job for a long term span.

6. Conclusion

In conclusion, the Green Building Index (GBI) is conceived to be able to aid architects, designers, builders, government bodies, building owners, developers and end users to understand the impact of design towards the environment. It also helps to provide choice and solution in producing a better design with full consideration to the environment in the future. In relation to this research, the importance of landscape architecture in the GBI practice and application is very imperative to be looked upon. More than that, the roles of the Landscape Architecture professionals are also very essential to be explored in the green building and the GBI practice. Since it is proven that the involvement of the landscape architects is quite less, proper strategies should be taken in order to promote and encourage the participation of this professional group. The strategies might also help to upgrade the image and the performance of the landscape architecture field in the eyes of the other professions as well as to secure the future of the landscape architecture professionals in the Built Environment field. They also may help to broaden the horizon of the landscape architecture as a profession as well as a niche area. Overall, it is hoped that this research has explored and opened up a new path and niche for the landscape architecture professionals to be as outstanding as other professions have performed.

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