



© Universiti Tun Hussein Onn Malaysia Publisher's Office

IJSCET<http://publisher.uthm.edu.my/ojs/index.php/ijscet>

ISSN : 2180-3242 e-ISSN : 2600-7959

International
Journal of
Sustainable
Construction
Engineering and
Technology

Relationship between Architect Hajeedar's Design Ideology and Sustainable Design Characteristics in Mosque Building

Suhailah M Mohd Siraj^{1*}, Hanita Yusof¹, Nurul Syaheera Aziz², Ahmed A. Elgadi³

¹Faculty of Civil Engineering and Built Environment,
Universiti Tun Hussein Onn, Batu Pahat, 86400, Johor, MALAYSIA

²Faculty of Built Environment & Surveying,
Universiti Teknologi Malaysia, 81310, Johor, MALAYSIA

³Faculty of Engineering,
University of Azzaytuna, Tarhuna, LIBYA

*Corresponding Author

DOI: <https://doi.org/10.30880/ijscet.2022.13.04.027>

Received 31 October 2022; Accepted 31 October 2022; Available online 13 November 2022

Abstract: Hajeedar is one of the prominent architects in Malaysia who is well-known for his personality, forward-thinking and modern-minded while remaining proud of Malay tradition and religious beliefs. Many of his architectural design ideology revolve around the context and material of the building. This is to ensure that the building is comfort, sustain and used by the community in the surrounding area. The objective of this study is to determine the relationship between architect Hajeedar's design ideology and the sustainable design characteristics of site development, indoor quality, material selection, and energy efficiency. The data for this study was obtained through an interview with architect Hajeedar, literature review on sustainable design characteristic and observation on the selected mosque building. Finding shows that there is similarity of Hajeedar's design ideology and sustainable design characteristics which can be seen in the mosque design. This study is to provide understanding of the relationship between architect Hajeedar's design ideology and sustainable design characteristics which influenced the architecture of mosque design.

Keywords: Hajeedar's ideology, sustainable design, mosque architecture

1. Architect Hajeedar's Design Ideology

Architect Hajeedar is one of the prominent architects in Malaysia who was already in the industry since 1978. He is well-known for PAM Gold Medal winners, the Norwegian Penguin Prize winner, and the Honorary Consul of the Republic of Maldives in Malaysia. In the eyes of the community, Hajeedar is also known for his personality as a figure who is always looking forward as well as modern minded but still proud of Malay tradition and religious beliefs in Islam (Baharuddin, 2015). Many of architect Hajeedar's architectural ideas revolve around the context and material of the building (Baharuddin, 2015). Hajeedar's architectural aspiration is greatly influenced by modern architectural thought in understanding the modernism movement from the West pioneered by Le Corbusier and Frank Lloyd Wright. However, according to an interview, he believes the design appearance that respects nature is very important which imply the society needs that easily accepted, sustainable, and fully functional to the society.

Hajeedar adheres to the principle of producing architecture design based on responsibility as a human being to achieve the desire of a more sustainable architecture design. His main purpose is to be a designer who can appreciate and care about the creation of nature through its architectural appearance. This principle brings him to the ideology of emphasizing the appearance of architecture in terms of design that concerned with context (human movement, surrounding facades, building design, structure, climate, topography, anthropometry) and building material. According to Hajeedar (2015), building design must be responsive to existing context conditions such as landscape, topography, climate (temperature changes and wind movement), customary heritage and socio-cultural organisation of the local community, reliance on the most recent technological achievements capabilities and use of local building materials. These are required to create architecture with its own characteristic with no significant similarities to other designs built around the world.

Therefore, when designing buildings, Hajeedar (2015) follows two main ideas which concern on the contextual and material. This referred to i) appreciate nature and surrounding ii) the use of natural and local building materials to be valued and recognised throughout the ages.

i) Appreciate nature and surrounding

Hajeedar's sensitivity to the context is demonstrated by his respect for the surroundings of the site. He has a respect for the construction site's environment, as well as sensitivity to the needs of the context, which is the design context and understanding of the value of sustainability. He also strives to make the building harmony with the natural environment and to respect Mother Nature. He frequently adapts the use of natural materials such as bricks and concrete. This is necessary so that the resulting wall facade looks natural and does not stand out too much. Other elements in his design such as external walls for the front, back, left, and right facades should have numerous openings to allow natural light and air flow into the main and secondary spaces.

Hajeedar's ideology of appreciating nature and its surroundings will result in a building that is in harmony to its environment and serves as a complete shelter for all types of activities in the building. Furthermore, it will activate the effective and unique internal and external qualities of the building from a three-dimensional visual point of view, which is an appreciation from every different angle.

ii) Natural and local building materials

Application materials obtained in the environment of the construction area will create architecture that is harmonious with the surrounding conditions as well as suitable for the climate and resistance to temperature changes. The use of materials plays a role in producing the design which works well for the benefit of the society. Therefore, application of natural and local materials needs to be adapted because it meets the needs of the local context, which is climate resistant and fits the landscape and environment. The use of building materials and structures should be in a unique way. It can also create 'emotions' and able to create a feeling of 'belonging' to building design. This can be seen in the use of material elements natural rough texture on wall structures that match the building and environment (Hajeedar, 2015). In this case the floor must have the type of properties and installation techniques corresponding to consumer activity (Hajeedar, 2015). Therefore, the use of terracotta flooring is often used because of its organic nature. Not only its reddish-brown color symbolizes the color of the earth, but the texture is also smooth and not slippery. In addition, it is durable, easy to maintain and corresponding to temperature changes. In other words, terracotta floors adapt to room temperature differences. When the internal temperature is warm, terracotta floors will provide cool atmosphere while when the indoor temperature of the building is cold, the terracotta floor will react with creating a warm atmosphere.

Hajeedar is one of all who always think and emphasized the involving of context and building material as well as surrounding culture in his building design. This thinking is important so that the architecture will produce a contemporary and local soul in addition to emphasizing the needs of society in his design. Moreover, the building could sustain for many decades as it fulfills the needs of the environment (Hajeedar, 2015). In other words, his ideology of appreciating the nature were parallel to the concept of sustainable design in most of his mosque design.

2. Sustainable Design Characteristics

The universal consent on a sustainable or green building will bring to the understanding of the environment-friendly architecture which have several classifications of characteristic such as ventilation system (for heating and cooling), energy efficiency (for lighting and appliances), water saving, landscape plan (maximize passive solar energy), alternate power (solar or wind power), adaptive reuse of other building, recycled architectural salvage usage, efficient space usage and many more (Burcu, 2015). Most green buildings will have some of these features. However, to achieve the highest goal of green architecture, it is best to have all the features mentioned fully sustainable.

Sustainable design characteristic is composed by three pillars which are economic, environmental and social where informally known as profits, planet and people (Mitchell, 2020). According to CBFEE (1999) there are four areas that need to consider when involving a sustainable building design characteristic which are:

- i) site development-
reduce the impact of natural environment development such as the orientation of the buildings-can give advantages on the wind patterns, solar access, shading patterns that can lessen the heating and cooling factors,
- ii) material selection-
the usage of natural and local material that durable can make it more economically and reduce negative impacts to the environment,
- iii) energy efficiency-
efficient building design that creates comfortable environment which take the advantages on natural elements
- iv) indoor quality-
allow high indoor air quality to promote occupant health

By having these characteristic, it is possible to increase positive impacts as the building well designed to suit the demands of its time. Therefore, the impacts such as comfort, economy, aesthetic and environmentally responsible are the positive impacts that will be given by the sustainable building to the users. Comforts such as extra sunlight allowed into the building makes the interior more cheerful and pleasant during the day than a conventional building (Kats, 2006). Economy is when there is energy efficient happened and doesn't have to cost more. Aesthetic where passive solar features make the building bright and pleasant. Lastly, environment-friendly where large openings as passive cooling doesn't need more electricity for lighting and air conditioning can reduce as well (Woolley, 2006).

These sustainable design characteristics will be the reference to determine Hajeedar's design ideology that reflect the sustainable characteristic. It will then serve as an indicator to depict the sustainable feature on Hajeedar's mosque building.

3. Methodology

The methodology of this study was done by obtaining the primary data through interviews with Hajeedar and his close acquaintances, as well as reports or documentation in the form of magazines, books, and texts about him. The purpose of this interview is to find out what is his design ideology towards architecture in Malaysia. Then, the data of Hajeedar's design ideology compared to the sustainable design characteristic discovered through the literature review which consists of site development, indoor quality, material selection, and energy efficiency. Findings shows that there is similarity between Hajeedar's design ideology and sustainable design characteristic. The finding has been proved through observation on the case study of mosque design by Hajeedar. The observation method for this case study was carried out on the mosque building designed by Hajeedar based on his ideology and thoughts. Unstructured observation methods are used to understand and process the design of mosque buildings based on sustainable characteristics. To carry out these observations, site visits are important to enable the researcher to obtain information directly.

4. Relationship between Architect Hajeedar's Design Ideology and Sustainable Design Characteristic

The purpose of comparing the relationship between architect Hajeedar's design ideology and sustainable design characteristic is to determine the similarity between his ideology and sustainable design. The finding shows that there is similarity between the Hajeedar's ideology and the sustainable design characteristic. Hajeedar's ideological design includes the two points mentioned above - i) appreciation for nature and surroundings, and ii) natural materials. Both ideas are seen to have similarities to characteristics of sustainable design which are site development, indoor quality, energy efficiency, and material. Figure 1 compares the ideologies of Hajeedar and the characteristics of sustainable design.

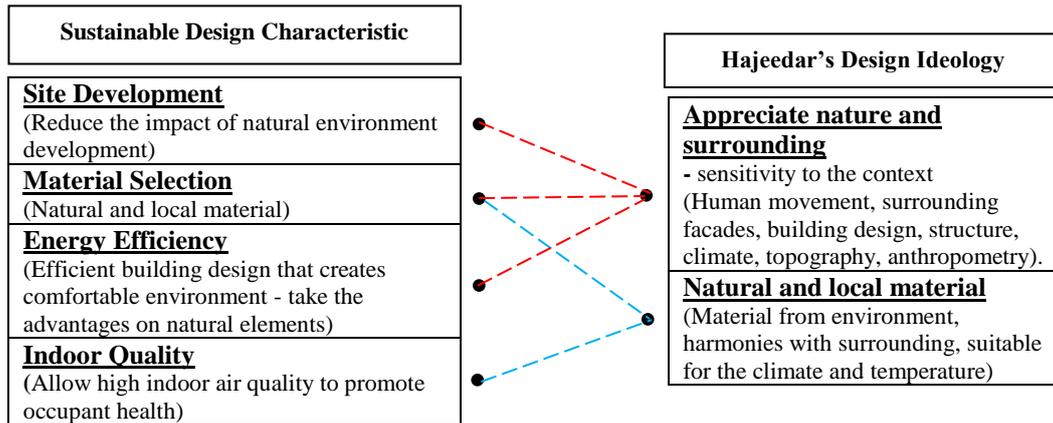


Fig. 1 - The similarity between the characteristic of sustainable design and design ideology of Hajeedar

Figure 1 shows the similarity of sustainable characteristic and the ideology of Hajeedar that portray on the mosque building designed by him as case study. These similarity shows that the ideology of Hajeedar in designing a mosque building led to a sustainable design where he emphasized the nature, natural and local material to appreciate the elements on site. This ideological thought of Hajeedar can be seen to fits the characteristic of sustainable architecture and will be explain in the case study.

5. Case Study

There are two mosques and one surau selected which are Masjid Saidina Abu Bakar As-Sidiq in Bangsar, Masjid Saidina Othman Ibnu Affan in Jalan Tun Razak and Surau Persint 8 in Putrajaya. The buildings were observed using the indicators of sustainable architecture characteristics which are site development, material selection, energy efficiency, and indoor quality and they were then related to Hajeedar's Design Ideology.

Table 1 - The observation of mosque design through sustainable design characteristic and the relationship with Hajeedar's design Ideology

Mosque Building	Sustainable Design Characteristic	Hajeedar's Design Ideology
	<p>Site development</p> <ul style="list-style-type: none"> • Building orientation <ul style="list-style-type: none"> - the building orientation reflect the needs of the qibla, sun path and wind - the decision of the building orientation involves the existence of an existing landscape at the site so that the landscape could act as shade. 	Appreciate Nature

Energy Efficiency + Indoor Quality



- **Energy Efficiency**
 - A lot of openings allow the natural wind and light that can reduce the usage of energy supply
- **Indoor comfort**
 - By having more opening on the wall, the indoor comfort might reach to the maximum comfort can attract more people to come to the mosque.

Appreciate Nature

Material Selection



- **Natural and local material usage**
 - Use local materials that are durable, such as concrete, and can withstand temperature changes, such as terracotta finishing. This would encourage more people to use the building because the materials give comfort

Natural and local Material Usage

6. Conclusion

This study provides understanding of the relationship between architect Hajeedar's design ideology and sustainable design characteristics which influenced the architecture of mosque design. Based on the findings, it can be concluded that Hajeedar's design ideology, which revolves around context and material, meets the sustainable design characteristics of site development, indoor quality, material selection, and energy efficiency. The observation on the mosque that Hajeedar designed serves as evidence of appreciating nature elements and the environment, as well as the use of natural and local materials. Hajeedar's ideology, which values nature and emphasises the use of materials that are suitable and durable over time, would develop the society, as the society would occupy the mosque because of its comfort. This situation can also sustain the mosque building that can be used over time.

Acknowledgement

This study was supported by University Tun Hussein Onn Malaysia through Tier 1 (Code: H903) for the research project *The Influence of Modern Regionalism Thought by Hajeedar Architect Towards a Sustainable Mosque*. The authors also acknowledge the support of the Architecture Department, University Tun Hussein Onn Malaysia.

References

- Amany A. Ragheb, Aida N. Abou Rawash, Gehad M. Mekkawi (2013). Assessment for a Typical Housing Prototype (THP) In Terms of Zero Carbon Effect, Case study: Northern Western Coast Hinterland, Egypt *Building Simulation Cairo Towards Sustainable & Green Built Environment Conference*, Cairo. pp.33-45
- Baharuddin N. (2015). UPM Press. *Thinking Hands of Hajeedar*. pp. 24-35
- Burcu, G., (2015). Sustainability Education by Sustainable School Design. Dokuz Eylul University, *Procedia - Social and Behavioral Sciences 186*. Department of Architecture, Turkey. pp. 868 – 873

- CBFEE. (1999) *Skylighting and Retail Sales: An Investigation into the Relationship Between Daylighting and Human Performance*, The Hashing Mahone Group, on behalf of the California Board for Energy Efficiency Third Party Program. Aug. 20, 1999
- G. Chichilinisky, (1997). What is Sustainable Development? *Land Economics* 73,(4), pp. 467–91
- Hajeedar A.M (2015). UPM Press. *Thinking Hands of Hajeedar*. pp. 36-62
- Kats, G. (2006). Greening America's schools: Costs and benefits. A Capital E Report. Retrieved October 1, 2009
- Woolley T. (2006). *Natural Building: A Guide to Materials and Techniques*. Crowood Press
- Jairazbhoy .(1972). *An Outline Of Islamic Architecture*. London: Asia Publishing House
- Jean-Marc Moulin, Hydro, (2019). A guide to material selection in sustainable product design. article, <https://www.shapesbyhydro.com/en/material-properties/a-guide-to-material-selection-in-sustainable-product-design/>
- Mitchell Grant. (2020). Sustainability, article, <https://www.investopedia.com/terms/s/sustainability.asp>
- Rasdi, M. T. M. (2017) „Contextualism in Mosque Architecture: Bridging the Social and Political Divide“, *Journal of Islamic Architecture*, 4(4), p. 181. doi: 10.18860/jia.v4i4.4469
- Paulína Šujanová (2019). A Healthy, Energy-Efficient and Comfortable Indoor Environment, a Review. Faculty of Civil Engineering, Slovak University of Technology.MDPI. *Energies* 2019, 12, 1414