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# THE INFLUENCE OF MUGHAL ARCHITECTURE ON MASJID ZAHIR: CASE STUDY ON FIVE RURAL MOSQUES IN KEDAH, MALAYSIA

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#### ABSTRACT

Masjid Zahir in Alor Setar is a prominent mosque in Malaysia. Its architecture is a century years old and arguably one of the most beautiful mosques in the world. This study looks at the elements of the Zahir Mosque architecture that are heavily influenced by Mughal architecture originating in Northern India. A structured observation survey had been conducted on five rural mosques in Kedah to study the mosque architectural attributes. These mosques have adapted many elements such as onion domes, domed-kiosks, pishtags and arches. Significantly, these elements can also be seen on Masjid Zahir. The study found that the Masjid Zahir has acted as a reference point for the construction of many other mosques, especially in Kedah, Malaysia. Among the five mosques, the most elaborated detail elements were highlighted on Masjid Ar-Rahmah. Meanwhile, Masjid Nurul Ehsan has been chosen as the mosque with the most identical identity with its parent Masjid Zahir. However, this mosque is no longer a prestigious mosque due to the renovation work which has been seen to disturb the true identity of the This study can attract the public interest to appreciate architectural history and mosques architecture in Kedah, Malaysia. © 2019 INT TRANS J ENG MANAG SCÎ TECH.

#### 1. INTRODUCTION

One of the most significant mosques in Malaysian architectural history is undoubtedly Masjid Zahir, which was built on a riverbank known as Sungai Kedah in Alor Setar, the capital city of Kedah Darul Aman. According to India TV News (2014), Masjid Zahir was ranked as the fourth in the list of ten most beautiful mosques in the world. The construction of this mosque was completed on March 11, 1912. Ten years earlier a similar and identical mosque had been built in Tanjung Pura, Langkat, Sumatera, Indonesia. It was known as Masjid Azizi.

Both Zahir and Azizi have shown a strong influence of Mughal architecture. Evidently, very

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few academic articles discussed the Indian characters portrayed in the architecture of these two mosques. These mosques were also known as a royal symbol for Langkat and Kedah Sultanates. However, the Langkat Sultanate is no longer existed, and the building is only considered as a historical heritage. The Azizi mosque has passed its golden age. An evident of dissatisfactory can be seen on its surrounding (Figure 1B). Meanwhile, the Zahir mosque is still intact as a royal mosque for Kedah State (Figure 1A).



**Figure 1A**: Masjid Zahir, Alor Setar, Kedah, Malaysia



**Figure 1B**: Masjid Azizi, Langkat, Sumatera Source: http://visitlangkat.wordpress.com/2014/02/24/jejak -peninggalan-melayu-langkat

## 2. LITURATURE REVIEW

Mosque architecture in Malaysia falls into two categories, namely traditional mosque and colonial mosque. Traditional category mosques are mosques built with regional and local identity. Whereas the colonial category mosques consist of architectural identities influenced by the Middle East, Morocco and India (Ahmad, 1999; Basri, 2002). Khazaee et al. (2015) in their study have categorised Masjid Zahir as a mosque with colonial identity. This study had also observed the difference between Moorish and Mughal architecture adorned on early Malaysian mosques.

According to Mohamad Rasdi (2007), Islamic architecture found on the mosques was derived from various forms and terms across the ages. Multiple factors such as climate, technology and socio-political would decide the architectural characters of the mosques. Although there are plenty of studies on the mosque as an Islamic institution, however, most of them lack on architectural aspects. This opinion is recognised by Prof. Mohamad Tajuddin and Dr. Nangkula in their statement: Islamic architecture in Malaysia such as the National Mosque building is not much studied from the aspect of thinking and theoretical framework behind its design (Mohamad Rasdi & Utaberta, 2007).

Ali and Hassan (2017) have conducted studies on the elements of Mughal architecture found in Malaysia through case studies in three mosques namely, Masjid Kapitan Keling in Georgetown, Penang, Masjid Alwi in Perlis and Masjid Jamek in Kuala Lumpur. This study had also compared the original elements found in India such as the Jami Mosque of Delhi and Taj Mahal in Agra. The researchers believed this study was not completed because the Mughal architectural elements recorded in the local context did not include the Masjid Zahir. A study by Ibrahim and Abdullah

(2010) had detailed out the elements found on Masjid Zahir, but this study did not look at its affinity with other ordinary mosques, especially in Kedah.

Through a case study of mosques, the researchers can also appreciate the dual-layer space that provides passive cooling effects. This opinion was supported by Asif Ali (2012); his studies had shown the advantages of passive cooling space inherent in the major buildings of the Mughal dynasty. For local mosques, passive cooling architecture should have a fanless airflow system and natural lighting without lights (Mansor & Mokhtar, 2016).

## 3. METHODOLOGY

As the oldest, a royal mosque and the pride of its people; Masjid Zahir has always been a reference to the construction of other mosques found everywhere in the State of Kedah. This research will discuss five mosques that have similar architectural identities with the Zahir Mosque. These mosques are as follows:

Table 1. The Mosques involved in this study											
Mosque	ZAHIR	GHAIRU JAMEK	AR - RAHMAH	RAYATUL- ISLAM	KAMPUNG JELUTONG	NURUL EHSAN					
Location	Alor Setar City	Jitra Old Town	Kampong Manggol Bongor	Kampong Kubang Siam	Kampong Tobiar	Kampong Kubang Rotan					
Dietriet	Kota Setar	Kubang Pasu	Kubang Pasu	Kota Setar	Pendang	Kota Setar					

**Table 1**: The Mosques involved in this study

The researchers will conduct case studies and structured observations on the five mosques. Then, they will make comparisons on the architectural elements collected from the five mosques and compare them with the original elements found in the Zahir Mosque. The findings will then be recorded in the form of facts and collections of pictures. Next, the researchers will construct a summary table, and it will become as the most important note for this survey. Finally, analysis and discussion and conclusions will be made by referring to the summary table.

## 3.1 ARCHITECTURAL ANALYSIS OF MASJID ZAHIR

A general explanation of Masjid Zahir just described the construction of this building is similar to the architecture of the Azizi Mosque in Sumatera. The researchers argue that more detailed studies need to be made as comparing how this building has embedded architectural elements based on the characteristics of Mughal architecture, most of which are found in Northern India. The researchers have analysed the visual architecture of the Masjid Zahir (Figure 2). There are a lot of architectural elements in this building. The most prominent Mughal element can be seen on the main dome with inverted lotus-shaped decoration, domed kiosk or chhatri and guldasta, which is a small dome-spear that adorns every major corner of the mosque.

Masjid Zahir is a state mosque in Alor Setar City. It is also a landmark and symbol of Islamic architecture in the State of Kedah. This mosque is visited by all walks of life from both inside and outside the country. To provide more perfection and increase the capacity of the users, the mosque was renovated twice in 1960 and 1975. However, the renovation of the mosque has occurred 3-4 times. The mosque prayer hall originally only accommodated 600 prayers had been extended to 2200

prayers (Ibrahim & Abdullah, 2010).

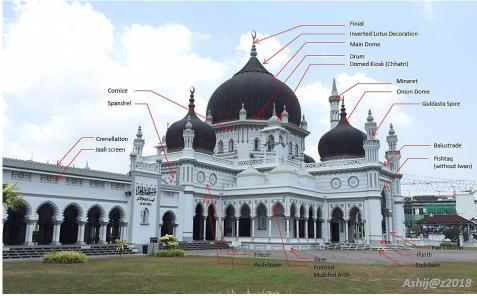


Figure 2: An analysis of the architectural elements of Masjid Zahir

Kedah Darul Aman has over 550 mosques throughout the state. Building a new home, for example, is usually inspired by another home. A process like this in architecture is called a precedent study. There are many mosques in Kedah that are built by adapting the Masjid Zahir as an exemplary building or reference model. Although no other mosque has been built by imitating the entire identity of the original mosque, however, there are several elements in the surveyed mosques that have identical identity with the architecture of Masjid Zahir. Among the important elements is the black-onion dome, domed kiosk (chhatri), guldasta spire, entrance way (pishtaq) and arches.

## 3.2 ARCHITECTURAL CONNECTIONS

One of the advantages of Masjid Zahir is that even though many times the building is renovated, its art remains beautiful and balanced. The beauty of Masjid Zahir has influenced the construction of other mosques, but not all have succeeded. The researchers believe that the five mosques of this study are among the local mosques that have the most significant relationship with Masjid Zahir's architecture (Figure 3). The main identity shared by these mosques is the onion dome. Each mosque has a double-layer space, where there is an arcade, or a veranda surrounds the main prayer hall in the middle of the mosque. The mosque columns located on a structural grid. The colonnade is adorned with arches. Mostly, there are two types of arches, namely the pointed arches and multifoliated arches.

Presently, only two mosques still maintain the original double-layer space, namely the Kampong Jelutong and the Ghairu Mosque. These mosques continue to use passive ventilation (without air conditioning), while the other three mosques were renovated and no longer had the passive double-layer space due to the installation of air conditioning systems. As stated, Masjid Zahir is recognised as the most beautiful reference mosques in Kedah. The researchers found that the other five mosques did not fully adapt to the methods of elemental constructions exhibited by this supreme mosque.



Figure 3: Five mosques that have connections with the Masjid Zahir

In architectural design, this situation is expected due to the existence of various factors such as the construction cost and the status of each mosque. For example, a rural mosque with low financial allocation is unlikely to be beautifully built like the Zahir Mosque. However, there are still some interesting characters and identities found in the architecture of the surveyed mosques. This finding can be seen in the comparative and analysis table (Table 2).

## 3.3 DATA ANALYSIS

The following table is provided as a reference of the conclusions from the study and observations made on the six mosques (including Masjid Zahir). The analysis of the study is described by this table.

**Table 2**: Analysis of the architectural elements of study mosques

Mosque	Zahir	Ghairu Jamek	Ar-Rahmah	Rayatul islam	Kampung Jelutong	Nurul Ehsan
Completion/	11.3.1912	1960**	*	1916111	genutong	*
*officially opened	*15.10.	(estimated)	30.4.1965	1966	1993	08.12.1966
	1915	, ,				
	The capacity of prayers in the Main Prayer Hall					
	365 pax	360 pax	150 pax	162 pax	225 pax	128 pax
Element						
Dome	4	1	3	3	2	4
Chhatri	3	0	1	1	0	3
Minaret	1	0	0	0	1	1
Turret	6	0	0	0	0	0
Guldasta	32	12	10	12	28	18
Crenellation	yes	yes	yes	yes	yes	no
Pyramidal Roof 11		0	0	0	0	0
Pishtaq	3(2)	2	1	2(1)	1	3
Arches (internal)	64	23	11 (44)	6 (21)	34	6 (25)
Spiral Staircase	1	0	1	1	1	1

#### 3.3.1 MAIN PRAYER HALL AREA

As a royal-state mosque, Masjid Zahir is provided with the largest main prayer hall. The whole space is 289 m². But this area can only accommodate about 365 congregants, taking into consideration the space of the pulpit, eight pillars and pentagon-shaped walls. The pentagonal structure was built to support the mosque's main dome made of concrete. The Zahir Mosque has twice undergone renovations carried out in 1960 and 1975. The mosque originally had three parts of the entrance ways (pishtaq). The pishtaq space on the left side of the mosque has now been added and combined with a larger open prayer hall. There is a concrete dome on the rooftop of this pishtaq space. Entirely, Masjid Zahir has four domes. Three domes are located above the pishtaq spaces, and the main dome with a diameter of 13.7 meters is placed on the top-centre of the mosque space.

Masjid Ghairu Jamek is an old mosque for Jitra city. The mosque can accommodate as many as 360 people in the main prayer hall. Masjid Ghairu had served as the main mosque for residents in Jitra until 1985. A new mosque named Masjid A'ala that accommodate up to 8000 congregants had been built to replace the Ghairu Mosque as the main mosque in Jitra.

Meanwhile, Masjid Kampong Jelutong is capable of accommodating 225 congregants in the main prayer hall. It is the most recent mosque built compared to four other mosques studied by the researchers. Three more mosques have a lower capacity of only about 150 people. These three mosques have been through several renovations and enlargements. Although the original forms of the mosques remain, there is no double layer passive space that promotes arches on the outside of the mosques. Most of the arches have been covered with glass walls.

A similar problem happens to the entrance way or the pishtaq space. The entrance ways located at Masjid Rayatulislam and Nurul Ehsan have been covered with glass walls. There is no more architectural language that this space works as a welcoming space as well as bringing users into the main prayer hall in the middle of the mosques.

## 3.3.2 DOME, CHHATRI AND MINARET

As the most magnificent mosque, Masjid Zahir has four concrete domes. This means every visitor under the domes will be able to see the dome-shaped decorative concrete ceiling. On the contrary, the other five mosques only use dome made of black zinc sheets. The dome that made of zinc metal is an artificial architecture. It is just a cosmetic element to reveal a similar identity like Masjid Zahir. There are decorative concrete vaulted ceilings in the Zahir Mosque; the other five mosques only use zinc metal dome with flat-type suspended ceilings underneath. Compared to decorative vaulted ceilings, the flat type suspended ceilings cannot provide architectural appreciation to the public. Users underneath the flat ceiling may not know that there is a dome on the rooftop.

Masjid Kampong Jelutong and Ghairu Jamek still use natural ventilation as well as fans. The high ceiling position does not have a positive effect on the three mosques, namely Masjid Ar-Rahmah, Rayatulislam and Nurul Ehsan as they use mechanical ventilation (air conditioning). Chhatri or domed kiosk is a unique and attractive element of Indian architecture. Three concrete chhatries at Masjid Nurul Ehsan are almost equal to the chhatri built at Masjid Zahir (Figure 4) whereas the only chhatri found at Masjid Al-Rahmah is similar to the chhatri of Masjid Rayatulislam. These chhatries are covered with glass windows. Both have a spiral staircase inside the mosque that serves as a place

of the muezzin calling prayers. These mosques did not have a minaret or azan tower.

The minaret tower is only available at Zahir Mosque, Kampong Jelutong and Nurul Ehsan. There is no similarity between the three minaret designs. Minaret at Zahir Mosque is thin and tapered like a minaret influenced by the Turkish architecture. While the minaret at Masjid Kampong Jelutong is pagoda-shaped with a swordlike finial. A strong influence of Indian architecture can be seen at Masjid Nurul Ehsan with its relatively low built minaret, only slightly higher than a typical chhatri. This minaret looks like a stupa but it has a finial on top.



**Figure 4**: Four mosques with chhatries.

Masjid Nurul Ehsan is the smallest mosque in this survey, but this mosque is the most special building because it has the closest identity to the Zahir Mosque. It has four domes, three chhatries and a stupa like minaret. It has a spiral iron staircase mounted inside the mosque like it is in the Ar-Rahmah and Rayatulislam mosques, but in this mosque, the staircase is installed in the minaret enclosure not in the chhatri's chamber. The form of a minaret at Masjid Nurul Ehsan after all is different from the Zahir Mosque. Most mosques provide a spiral staircase that serves as access to a muezzin entering the chhatri and minaret chambers. Presently, the spiral staircase, chhatri and minaret chambers have not been used since these traditional methods have been depreciated. Instead, mosques are now using a modern speaker system.

## 3.3.3 TURRET, GULDASTA AND CRENELLATION

The most intriguing architectural elements are found in the Zahir Mosque with six turret towers and 32 guldastas decorating each corner of the mosque's rooftop. The Kampong Jelutong Mosque has 28 guldastas shaped like cabbage flowers. The minaret and guldastas on this mosque are influenced by Chinese architecture. Generally, this mosque has applied the identity of double layer designs and uses the grey tones and black dome similar to its predecessor the Masjid Zahir. There are 18 guldastas on the rooftop of Masjid Nurul Ehsan making the details of guldastas in this mosque is better than three other mosques namely Ar-Rahmah, Rayatulislam and Ghairu Jamek.

All the surveyed mosques have used crenellation on rooftops except Masjid Nurul Ehsan which has used a jaali or latticework made of concrete blocks. The Rayatulislam Mosque has exhibited a beautiful crenellation with a well arranged of merlons blades made of concrete. Masjid Ghairu

Jamek has shown a unique combination of crenellation and jaali on its rooftop. However, the mosque is currently in a state of ill-health because it has not been properly maintained and no longer used as the main mosque for the residents of Jitra.

Overall, the best decorations on the building facades have been exhibited by the Masjid Zahir. In this supreme mosque, there are elements of horizontal decoration consist of crenellation, jaali, cornice and architrave that have provided a balance against the vertical elements such as columns, minaret, turrets, guldastas and finial.

# 3.3.4 PYRAMIDAL ROOF AND DOME

Masjid Zahir has also used another special decoration on its rooftop. There are 11 square pyramidal roofs flanked on four corners of the mosque. This character is found only on its precedent mosque the Masjid Azizi of Tanjung Pura, Langkat (*Figure 1A* and *1B*). The researchers found that neither the surveyed mosques nor mosques elsewhere were using this pyramidal roof element. The main dome of Masjid Zahir is made of concrete. Hence, visitors can appreciate the beauty of the dome ceiling decoration when they are praying in the main prayer hall. All of the roofs in the other mosques were found using painted zinc-metal domes. Therefore, there is no purpose to highlight a typical steel structure to visitors who are sitting underneath of the domes. All the surveyed mosques only use asbestos flat ceilings. They did not use any special decoration such as a chandelier or pendant lamps to highlight the interior of the mosques.

#### 3.3.5 PISHTAQ AND ARCHES

Pishtaq is a welcoming space or porch to enter a mosque. In the pishtaq area, there will be at least one arch that highlights the decoration style of the mosque. Typically, the pishtaq space also has an iwan or arch that is projected to the inside of the mosque. This element is also known as a barrel vault). However, the researchers did not find any iwan because there was no vaulted space (barrel arches) in all the surveyed mosques. There are many types of arches. The most special pointed-multi-foliated arch type can be found at Masjid Zahir. Masjid Kampong Jelutong is furnished with an ogee arch type; meanwhile, the other four mosques are fitted with a multi-foliated arch.



**Figure 5**: The pishtag spaces for the six studied mosques.

There are 64 external aches found at Masjid Zahir. This rank is followed by 34 and 23 external arches located at Kampong Jelutong and Ghairu Jamek Mosques. Three more mosques have only less than 12 arches since these mosques have been heavily renovated: Passive double-layer space has been fitted with glass-windows and serves as an air-conditioned prayer hall for the mosques. The researchers found all the surveyed mosques are simply unique because even without the iwan (excluded the Masjid Ghairu Jamek), they have domes on their pishtag spaces (Figure 5). With

blackened domes; Rayatulislam, Nurul Ehsan and Kampong Jelutong Mosques have significantly highlighted the identity of Masjid Zahir in their architecture.

Masjid Zahir has maintained two out of three pishtaq spaces due to the addition of space on the left side of the mosque. On the rooftop of the pishtaq spaces there are three medium-large black onion domes. Masjid Rayatulislam originally had two pishtaq spaces. Presently, one pishtaq space has been renovated to enlarge the secondary praying area. The other space is left to be fitted with a glass wall as all the mosque spaces have been air-conditioned. Above these pishtaq spaces, there are still two medium-large black onion domes. The main dome at the centre of the rooftop is the biggest dome of this mosque.

Apart from the Masjid Zahir and Kampong Jelutong, the pishtaq spaces of four other mosques have a similar style. There are rectangular square and multi-foliated arches. However, only two pishtaqs located at the Ar-Rahmah and Ghairu Jamek Mosques remained in their original forms. Conversely, the pishtaq arches of Nurul Ehsan and Rayatulislam Mosques have all been enclosed as these spaces have been renovated into air-conditioned spaces.

## 3.4 ARCHITECTURAL ANALYSIS: MASJID AR-RAHMAH

Here, the researchers presented a detailed example of how the study and analysis of architectural elements have been carried out on the Ar-Rahmah Mosque, which is one of the five surveyed mosques. In today's condition, this mosque is considered a small mosque. The main prayer hall of the mosque can only accommodate about 150 prayers. Hence, like most other mosques, this mosque had also undergone renovation.

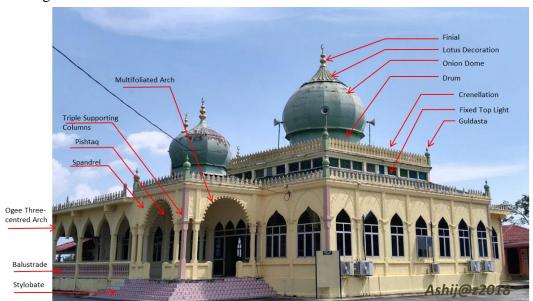


Figure 6: Analysis of architectural elements of Masjid Ar-Rahmah, Manggol Bongor.

Originally, this mosque had a double layer space. Pay attention to the multifoliated arches, they are the original arches of this mosque, but now they have been closed with walls and installed new casement windows in the form of pointed ogee (Figure 6). The distinctive quality of this mosque lies in its original design that reveals the main dome with an inverted lotus decoration.

It is particularly noticeable that this building is influenced by Mughal architecture. Most of the Mughal buildings used onion domes. For this building, there are three onion domes, one onion dome

is located above the porch of a pishtaq space (Figure 7). The ogee arches used in the renovated space seem quite frustrating as the details of the constructed arch and column looked very simple. These new details are odd-looking compared to the details of the existing multifoliated arches and decorative pillars completed in 1965. An analysis of the architectural elements that have been recorded by the researchers is shown in Figure 6 and 7. So far, this architectural analysis is the only study that examined the design of Malaysian local mosques. Such studies have been carried out by many architectural researchers focusing on prominent Mughal buildings such as the Taj Mahal in Agra, India.

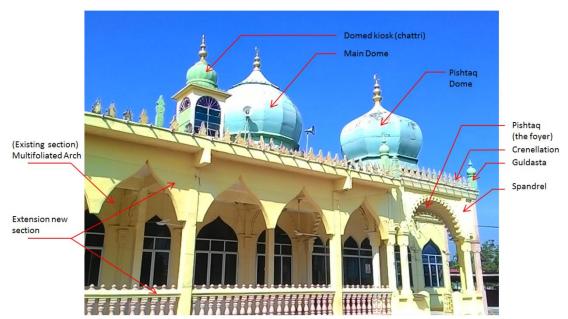


Figure 7: Analysis of architectural elements of Masjid Ar-Rahmah (Side elevation)

Although the method of this architectural analysis looks simple, the researchers have to conduct initial research and review to determine the types of elements used in a mosque. This analysis can provide new knowledge especially to the students of diploma-level architecture in Malaysian polytechnics. They can understand the history of architecture by examining the architectural elements used in a building.

#### 4. DISCUSSION

Masjid Zahir is well known as one of the most beautiful mosques in Malaysia. This study also raised the image of five ordinary mosques in Kedah that have special architectural values. All these mosques have been well designed, both for internal space and external facades. Originally, each mosque had a double layer space that functioned as thermal insulation, prevented direct sunlight, and reduced heat flow into the main prayer hall.

Various changes have taken place in social institutions. Most mosques have now been air-conditioned. This change is a common requirement to provide comfort to users. Masjid Zahir has a combined space; its main prayer hall used an air-conditioning system, and its other sections maintained passive ventilation. Only Ghairu Jamek and Kampong Jelutong mosques are still using their passive spaces like the original design. Whereas, the passive spaces in the three other mosques have been significantly renovated. There is no more double-layer space and multifoliated arches.

The original mosque buildings have shown some impressive details. Special architectural elements can be found in all mosques, including small mosques such as Al-Rahmah and Nurul Ehsan. However, the situation has gone bad once the renovation works have been carried out. The appearance of the mosque seemed unmanageable. The architectural language of the building facade has been damaged. The most noticeable example can be seen at Masjid Nurul Ehsan; the mosque management have done a lot of additional works, but all renovations look inconsistent. The red and green awning roofs and the installation of rainwater downpipes look very disturbing the facade of the building (Figure 8).





**Figure 8**: Arrows show the facade defects caused by improper renovation works

These mosques have no longer exhibit the uniqueness of their multifoliated arches. If any, it is just an additional arch, such as the ogee arch that is found in Masjid Ar-Rahmah. The arch here is simple without any details and uninspiring. There are also broken pieces of merlons (crenellation) and replaced with improper tombstone pieces. The installation of this inappropriate element has defaced the authenticity of the mosque architecture. At the time of this study, Masjid Rayatulislam was undergoing renovation and expansion of its left side prayer hall. The researchers found that the additional work was carried out adequately because it involved contractors, architect and engineers. When the renovation is completed, it is hoped that the mosque will be more comfortable and will retain the originality of the existing design.

There are many studies on mosque institutions in Malaysia. However, very few past studies focused on local mosques architecture. The principle objective of this study is to see the relationship between Masjid Zahir and other local mosques in Kedah. This study is also important to promote more research in Malaysia about the appreciation of architectural elements. The five masjids that have been studied are typical mosques commonly seen in rural areas. But, when the researchers closely examined their details, these common mosques have some special characters. The surveyed buildings seemed to be influenced by the Mughal architecture. These buildings appeared similar to Masjid Zahir regarding elements, designs and colours. Previously, perhaps not many community members concerned about architectural issues, identity and design of local mosques. This study can open up new ideas and encourage the public to appreciate the architecture in their surroundings.

## 5. CONCLUSION

On the detail parts and building finishes, this study found that ordinary mosques built in the past

look better than today's typical mosques. There are three beautiful mosques namely Masjid Ar-Rahmah, Rayatulislam and Nurul Ehsan which were built around 1965 respectively. It was a few years after Malaysia gained their independence. Surely, the country still lacked qualified and professional expertise in design and construction aspects. However, these mosques have been successfully built, and since then, they have been used by the villagers as a community centre and for congregational prayers.

A long-used building needs to be maintained and upgraded. This obligation will ensure the building to continue functioning adequately. However, the researcher was very disappointed when seeing most of the extra work carried out was not in line with the theme and the existing designs found on the mosque buildings. In today's world of information technology, the mosque management should at least conduct some research to find out about the intricacies of architectural designs before undertaking any modification work.

This study found that Masjid Nurul Ehsan is a mosque with the closest identity to Masjid Zahir. As a royal-state mosque, Masjid Zahir is managed by an administrative department. Masjid Nurul Ehsan on the other hand is just a rural mosque for Kubang Rotan village community. Seeing this mosque today, a researcher can still admire the original architectural values found in the mosque building, but the admiration has slightly been scratched as the mosque seems to have lost its identity; the mosque's facade and architectural style look disarray due to unsystematic modification of the mosque. In this context, the architectural appreciation of the mosque seems less important compared to the comfort of prayers who need to pray on the soft carpeted floors. They also want cooler interior space and air-conditioned prayer hall.

As a conclusion, we must appreciate the architectural history displayed by the existing buildings in our built environment. Although our country has a much younger architectural history than other civilisations such as the Mughal Dynasty that provides Taj Mahal as well as nearly 400 monuments found throughout the Indian subcontinent; every building like a mosque is a national treasure and future historical documentation. If we as the society fail to appreciate all this? Forever we will not have a great history.

# 6. AVAILABILITY OF DATA AND MATERIAL

All data involved in this study are already available in this article.

#### 7. REFERENCES

- Abdel-Hady, Z.M. (2010). *The Masjid, Yesterday and Today*. The Center for International and Regional Studies; Georgetown University School of Foreign Service in Qatar, 2, 1-18.
- Ahmad, A. G. (1999). The Architectural Styles of Mosques in Malaysia: From Vernacular to Modern Structures. *In Proceedings of the Symposium on Mosque Architecture: The Historic and Urban Developments of Mosque Architecture*. King Saud University, Riyadh, Saudi Arabia, 2, 147-163.
- Ahmed, S.A. (2012). *The adaab (etiquettes) of masjid*: 1-6. Retrieved March 11, 2018, from <a href="http://www.islameasy.org/pdf/MasjidAdaab.pdf">http://www.islameasy.org/pdf/MasjidAdaab.pdf</a>
- Ali, A. (2012). Passive Cooling and Vernacularism in Mughal Buildings in North India: A Source of Inspiration for Sustainable Development. *International Transaction Journal of Engineering, Management, & Applied Sciences & Technologies*, 4 (1), 15-27.

- Ali, A. & Hassan, A.S. (2017). Influence of Mughal Architectural Style on Malaysian Mosques. Proceeding of 3rd International Conference-Workshop on Sustainable Architecture and Urban Design (ICWSAUD2017), 30-44.
- Bagby, I. (2012). The American Mosque 2011: Report Number 1 from the US Mosque Study 2011. Activities, Administration and Vitality of the American Mosque: Retrieved Feb 11, 2018, from https://www.cair.com/images/pdf/The-American-Mosque-2011-part-1.pdf
- Basri, F. (2002). Seni Bina Masjid di Malaysia: Jurnal Tasawwur Islam, 5(8), 61-74.
- Bernama (2014, 4 Jun). *Masjid Tak Perlu Besar, Tapi Berhawa Dingin*. Retrieved March 13, 2018, from <a href="http://www.sinarharian.com.my/edisi/utara/masjid-tak-perlu-besar-tapi-berhawa-dingin-1.288147">http://www.sinarharian.com.my/edisi/utara/masjid-tak-perlu-besar-tapi-berhawa-dingin-1.288147</a>
- Collins, K.M.T., Onwuegbuzie, A.J. & Jiao, Q.G. (2007). A Mixed Methods Investigation of Mixed Methods Sampling Designs in Social and Health Science Research, *Journal of Mixed Methods Research*, 1(3), 267-294.
- Dana, K., Barreto, M.A. & Oskooii, K.A.R. (2011). Mosques as American Institutions: Mosque Attendance, Religiosity and Integration into the Political System among American Muslim, *Religions*, 2, 504-524.
- Darmayanti, T.E. (2015). *Kajian Aspek Budaya pada Seni Bina Masjid Agung Banten, Banten, Indonesia* [Tesis Sarjana Sains]. Universiti Sains Malaysia.
- Ibrahim, M. & Abdullah, F. (2010). *Masjid Zahir: A Heritage Masjid as a Traditional Landmark in a City*, Chapter 10, 163-182. Retrieved June 7, 2018, from <a href="http://irep.iium.edu.my/53193/3/Chapter%2010.pdf">http://irep.iium.edu.my/53193/3/Chapter%2010.pdf</a>
- Independent News Service Private Ltd (India TV) (2014, 14 July) *Top 10 most beautiful mosques in the world.* <a href="https://www.indiatvnews.com/news/india/top-10-most-beautiful-mosques-in-the-world-29415.html">https://www.indiatvnews.com/news/india/top-10-most-beautiful-mosques-in-the-world-29415.html</a>
- Jabatan Hal Ehwal Agama Islam Negeri Kedah (JHEAIK, 2018). *Bahagian Pengurusan Masjid dan Surau* (Function and activity of JHEAIK, information was updated on 15 February 2018). Retrieved March 13, 2018, from <a href="http://www.jaik.gov.my/?page\_id=168">http://www.jaik.gov.my/?page\_id=168</a>
- Kedar, M. & Yerushalmi, D. (2011). Sharia Adherence Mosque Survey: Correlations between Sharia Adherence and Violent Dogma in U.S. Mosques: *Perspectives on Terrorism*, 5(5-6),81-138.
- Khazaee, M., Yaakob, N., Awad, Z.A.M. & Md Ali, Z. (2015) Mughal or Moorish architecture: The origins of Malaysian mosques during colonial periods. *Pertanika J. Soc. Sci. & Hum.*, 23(3), 639–654.
- Mansor, N. & Mokhtar, N.A. (2016). *Masjid UlulAlbab*. ISBN 978-967-0962-21-4. Universiti Malaysia Terengganu:Penerbit UMT.
- Mohamad Rasdi, M.T. & Utaberta, N. (2007). Pemikiran dan Ide Seni Bina Islam di Malaysia Pada Era Moden (1950-2000). Research Vot, 78137, UTM, 3-180.
- Mohamad Rasdi, M.T. (2007). Mosque Architecture in Malaysia: Classification of Styles and Possible Influence, *Journal Alam Bina*, 9(3), 1-37.
- Mohd Nawawi, N. (2006). *Sejarah dan Konsep Senibina Masjid* [PowerPoint Slides]. Kursus Pemandu Pelancong Masjid: 23 December 2006, Masjid Negara, Kuala Lumpur.
- Nasir, A. H. (1984). Masjid-masjid di Semananjung Malaysia. Kuala Lumpur, Berita Publishing
- Nik Dahalan, N.N. & Ramli, N.M. (2014). Seni Bina Masjid Dalam Islam, *Jurnal Al-Muqaddimah*, 2(1), 39-47.

Utaberta, N. (2007). Seni Bina Islam Moden di Malaysia: Studi Terhadap Pemikiran, Falsafah dan Idea Rekabentuk: *Kertas Penyelidikan PhD*; Jabatan Seni Bina, Fakulti Alam Bina, Universiti Teknologi Malaysia, 24-56.

Utaberta, N., Surat, M. &Spalie, N. (2011). Isu dan Kepentingan Dokumentasi Serta Klasifikasi Dalam Kajian, Pendekatan dan Interpretasi Terhadap Seni Bina Islam Moden Di Nusantara: *Journal Design + Built; Seni Bina Islam Moden Nusantara*, 4(1), 85-97.



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