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Application and trends of motifs and styles on mosque ornamentation in Malaysia: from traditional to global

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Abstract. Mosque architecture in Malaysia has experienced a phase of development from the 16th century to the present. Moreover, mosque design and styles have various typologies which are heavily influenced by sociocultural factors. The diversity of the architectural design of this mosque also displays the development of Islamic culture and civilization which contains various historical backgrounds and influences, as well as having different timelines. However, this diversity of architectural language creates confusion about identity in the Malaysian mosque scenario. The study also found that there is a lack of documentation studies on the development of ornamentation that includes mosque architecture from the traditional to the global era. Therefore, this study aims to document the development of mosque ornamentation in six different eras in Malaysia and obtain the evolution in the application of motifs and styles. The study consists of 28 case studies of a selected iconic mosque which represent six different eras and adopted mix method strategy including content analysis and frequency analysis to track the pattern of changes and trends. The research findings show that changes in ornamentation involve several factors such as regional, colonialism, political, economic, and sociocultural has shaped the influences and styles of Malaysian mosques. This study also important in explaining the development of aesthetic preference and the application of ornamentation across the eras as well as classifying the style of ornamentation in each era of architecture to enrich the discourse of architecture in Malaysia and build a framework of ornamental design features that have a national identity.

1. Introduction

Mosques are a significant building typology for Muslims since they serve as a place of worship and a multi-functional community space. In order to meet the needs of users and the community, this building typology is expanding rapidly [1]. In Malaysia, the design of mosques is highly diversified and the range of mosque typologies is greatly influenced by socio-cultural factors. The form was initially very simple and domestic, but as Islam expanded, the patterns and design elements started to emerge [2]. Mosques are not only important religious icons but also important cultural icons and part of a common sight in Malaysia [3]. The architecture of mosques in Malaysia has undergone a phase of development from the 16th century to the present with a variety of architectural designs that may lead to identity confusion in the Malaysian mosque scenario [4-6].

Mosques should be built based on the relationship between humans and the Creator of Nature. However, the idea of simplicity and sustainability cannot be seen in iconic mosques that are built on a



massive scale and disregard the human scale [7]. [8] states that throughout the past 30 years, mosques in Malaysia have lacked innovation, advancement, and environmental awareness. The current modern mosque is still seen as a continuation of the traditional Islamic architecture. Since the 1980s, mosque in a developing Islamic nation have been constructed in a distinctive Middle Eastern design with large domes and multiple minarets [9]. According to [10], the majority of mosques in Malaysia have the same external appearance, including an extensive patterned dome, minaret, intricately carved interior decoration and more. The appearance of such elements is an imitation of earlier mosques civilizations that once have gone through the greatness upon a time. The majority of the ornamentations also draw inspiration from traditional Malay architecture and Islamic art geometrical patterns are added to the structure without considering its relationship to the real meaning of the ornamentation [11].

As mentioned by [12], currently there are approximately 6,829 mosques in Malaysia. From year to year, mosque is being constructed rapidly along with the growth in the Muslim population. Up until 2050, there is expected to be the construction of 50 new mosques annually [8]. Despite the fact that there have been numerous studies on mosque architecture, including architectural style, classification, and typology, documentation studies on the evolution of mosque ornamentation from the traditional to the global era are still scarce. Therefore, in order to understand the architecture of Malaysian mosque and the variety of ornamentation styles and patterns, this study aims to document the development of mosque ornamentation in Malaysia over the course of six different eras. It also aims to obtain the evolution in the application of motifs and styles to understand the architecture of Malaysian mosques and the diversity of decorative style patterns and provide an overview of the application of decorative styles in Malaysian mosques in addition to design considerations with national identity.

2. Phase of Mosque Architecture in Malaysia

Since the advent of Islam up till the present, Malaysian mosque architecture has undergone numerous phases of transformation [13-18]. Based on the history of architecture, influences, and styles, the mosque architecture phases in Malaysia were divided into six eras. Through the literature studies, [15] divided the mosque era into three categories: vernacular, colonial and modern styles. [14] classified Malaysian architecture into three periods: pre-colonial, colonial and post-independence. While [17] concluded four phases of mosque development: the traditional era, pre-colonial era, colonial era and post-independence era (1957-2007). The post-independence era appears to lack period distinctions, thus this paper incorporated three phases of the post-independence era from [19], namely modern, post-modern and global eras. As a result, this research concluded the development of mosque architecture into six phases: the traditional era, the pre-colonial era, the colonial era, the modern era, the post-modern era and, the global era.

2.1. Traditional era (15th to 18th)

Islam was introduced to the Malay Peninsula between the eighth to the thirteenth centuries by merchants who were also religious scholars [20]. Islam was adopted in a peaceful manner, gradually by the royal, nobility and people [21]. As stated by [22] and [23], Islam had become the dominant religion among the Malay people by the 15th century, under the rule of the Malay Sultanate in Malacca. In order to accommodate their requirements, villagers and religious scholars constructed mosques in small settlements during this period. In other words, the majority of the Islamic organizations during this period were primarily local [17].

During this era, the expansion of Islam within this region did not result in the emergence of a new style of Islamic architecture that was not local to the area. Instead, existing architectural forms were appropriated and then reinterpreted to fit Islamic concepts and applications [8]. [15] asserts that there are two varieties of an early mosque constructed during this time that exhibit regional and traditional influences. The regional influences can be distinguished by pyramidal roof form reminiscent of the old mosque constructed in Indonesia based on [13], [15] and [24]. While traditional influences may be seen in the Malay house form, regarding the local climate, geography, ecology and adaptation to the Malay socio-culture [17].

2.2. *Pre-colonial era (16th to 18th)*

Malacca's progress as a renowned trading port in South East Asia. Malacca was initially conquered by the Portuguese in 1511, followed by the Dutch in 1641. Significant changes occurred during the roughly 130 years Portuguese dominance, including the demolition of all important structures, including palaces and royal mosques that exalted the Malay people and Islam [24]. The situation shifted the Dutch, who had taken over the Portuguese authority in 1641. During this time, the Dutch publicly promoted Islam among the locals and was given the highest priority. Many mosques were built in rural settlements using Dutch technology where the existing timber mosque were renovated to masonry construction [15].

Early in the 17th century, the traditional characteristic of a mosque started paving the way to modern, strong brick structures with arches, which over time came to dominate architectural elements. The Dutch colonial era saw a transformation in the indigenous architectural scene in the Peninsula due to the arrival of foreign traders and merchants to Malacca. The Chinese and Indian Muslim immigrants brought their culture and Islamic faith. These rich merchants and immigrant workers who convert to Islam sponsored the construction of mosques [25]. As a result, some influences brought from Chinese and Indian patron made mosques during this time were more refined, which had infused local traditional architecture incorporating Dutch technology. A new architectural typology was named as sino-eclectic, where 'Sino' suggest a Chinese influence and 'eclectic' denotes an integration of two or more influences [16].

2.3. *Colonial era (18th to 1956)*

Around 375 years after the conquest of Penang island by The British East India company in 1786, British colonial rule in this region is believed to have begun [8]. Straits Settlements (1874), the Federated Malay States (1896), and the Unfederated Malay States (1909) were established in following years. Later on, the Malayan Union was established in 1946, consolidating British Malaya's loose administration within a year after the end of World War II [26].

The British rule brought about a significant transformation in the local scene in the 19th century. By introducing new architectural styles, materials, and construction methods at the time, new influences and transformations were made to mosque elements. Concrete and brickwork made up the majority of the mosque's construction materials [9]. During this time, British architects and engineers mostly incorporated the North Indian and European classical style, assimilated Western design with regional taste which reflected the mosque's form and design [16].

According to historians such as [13], [27] and [28], the colonial power that once dominated India was a factor in the spread the North India style to Malaysia. In order to introduce a new perspective on mosque architecture that was distinct from the local mosque design, the British adapted some building design elements and used them to their own constructions. Additionally, they also claimed that the British needed to demonstrate their dominance and power. While the country's royal mosque was built in the European classical style to satisfy the desire of the Malay aristocracy and Sultanates to represent their superiority and grandeur in society by imitating Western culture and modernity [17].

There were mosques constructed during this time as well, often by prominent individuals from the local Malay Muslim community or immigrants and converts who had settled in the country. Typically, the style of mosque reflected the traditional typology outlook. The Muslim traders from India and China also contributed to the local scene by introducing their distinctive architectural and cultural styles. The mosques that the Indian Muslims built in Muslim settlements resembled the Northern Indian architecture [28]. This demonstrate that throughout the colonial occupation, mosque was primarily built by the local society are the most notable buildings in the country [17].

2.4. *Modern era (1957 to 1980's)*

When Malaysia gained its independence in 1957, Malaysia had full autonomy to employ its own architects and builders to design and construct its mosque style [9]. In contrast to racial and progressive objectives, the legacy of modern architecture after independence symbolizes a global modern language, symbolically separating architecture from colonialism [19]. Therefore, as a newly independent nation, local architects were requested to develop public buildings, including state mosques that represent

national identity which can characterize the local culture and demonstrate that Islam is the official religion of the state [14]. The concept of architectural modernism, which projected the abstraction of forms and expressive structural features known as the modernistic structuralism [16].

Mosques were among the many public buildings constructed in the early 1970s that replicated traditional and historical characteristics in their architecture. The current architecture highlights new architectural vocabulary and an adaptation of traditional Malay style with Islamic elements [17]. [16] categorizes this type of style as modern vernacular, since the majority of the built form exhibits designs that show homogeneity from its architectural elements and appearance which use local material and construction methods.

2.5. Postmodern era (1980 to present)

The 'ReIslamisation' trend, which spanned the 1980s and 2010, has brought in Islamic architecture revivalism which drew inspiration from an earlier mosque typology [8]. The idea of 'Islamisation' is to portray Malaysia as the global epicenter of Islamic civilization in the world as a successful, modernized and progressive Muslim nation. As a result, Middle Eastern Islamic styles and components, including geometric patterns, pointed semicircular arches and others were introduced. Therefore, during this time, mosque construction increased rapidly, which suggest that more Islamic traits and aspects from other Muslim nations have been adapted and reinterpreted [17]. According to [16], mosque design during this era can be categorized as using a historical revivalism approach since it shows the use of decorations and ornamentation that were imported from other regions.

2.6. Global era (2008 to present)

A contemporary aesthetically pleasing design that started to gain popularity around 2008 or even earlier allowed architects to reevaluate mosque architectural design rather than merely copying existing design or styles. Additionally, it also corresponds with the current trend towards sustainable architectural buildings to counter the effects of climate change and reducing the CO₂ emission. The use of mosque architecture elements built over the past 30 years, particularly those constructed since the 1980s, which lacked the use of sustainable design and the adaptation to the spirit of the place and its time, needs to be reexamined. In order to ensure that buildings continue to be energy-efficient and relevant in the future, environmental preservation is required. This goal is to prevent many of the harmful effects of our daily lives on the environment [8]. [19] asserts that this new modernism is a reflection Malaysia's aspiration to become a competitive nation in the world stage.

3. Methodology

The methodology for this research is a case study involved categorizing mosque architecture from the traditional to the global era based on the mosque's typology, influences and styles. The case study methodology is selected because it enables the researcher to obtain a comprehensive understanding of a particular phenomenon or set of events [29] and also can present a complete picture because numerous sources of data were utilized. Additionally, observation was done during site visits in order to analyze ornamentation from the standpoint of visual art. [30] asserts that observation is an appropriate strategy in case study research, in addition to studying under the guidance of drawings obtain from certain parties. [31] stated that observation aims to investigate and describe the status of a collection of objects or systems of thought in which facts, properties and influences are observed comparatively. When conducting research, a knowledge of the potential for different interpretations will emerge, further relating to problems and research topics [32]. Informal interviews are also conducted as part of this process to validate details about mosques and modifications as well as placement of architectural elements or ornamentation. This interview involves parties such as mosque committee members, tour guides or individuals with knowledge of the mosque's history.

The scope of this study includes case studies of iconic mosques in Malaysia, which are divided into six eras for over 500 years starting from the 16th century to 2018. A total of 134 iconic mosques are listed for the purpose of selecting case study mosques at the beginning of the study obtained from

secondary data such as documentation, literature review, national archives, list of mosques from JAKIM, Malaysian Museums Department, Melaka Museum Corporation (PERZIM), Islamic Tourism Center (ITC) and the Center for the Study of Built Environment in the Malay World (KALAM). Next, these mosques are arranged according to the year of construction in a timeline that has been categorized into six architectural periods, namely; i) traditional era, ii) pre-colonial era, iii) colonial era, iv) modern era, v) postmodern era and vi) global era. Each era of architecture has developed its style and influence that forms the identity of mosque architecture in Malaysia, which is vernacular, sino-eclectic, Mughal, neoclassical, modernistic structuralism, modern vernacular, postmodern revivalism and sustainable contemporary. Through this timeline, the influence, architectural typology, and mosque development factors can be identified more clearly.

Research on 134 iconic mosques in Malaysia has finalized a total of 28 mosques as case studies as shown in Table 1 which are divided according to year, location and style. The selection of this case study mosque is based on five main criteria, namely; i) mosques that cover architectural eras and architectural styles that correspond, ii) mosques that still preserve the original form and characteristics of mosque architecture and ornamentation, iii) mosque architecture that has an iconic style in accordance with the architectural era, iv) complete mosque documentation data, and v) having significant ornamentation on the exterior components and interior spaces of the mosque.

Table 1. List of case study mosques, year, location and architectural style

Code	Mosque Name	Year	State	Architecture Style
M1	Kampung Laut Mosque	1676	Kelantan	Vernacular
M2	Langgar Mosque	1870	Kelantan	Vernacular
M3	Papan Mosque	1888	Perak	Vernacular
M4	Tinggi Mosque	1890	Perak	Vernacular
M5	Kampung Tanjung Beringin Old Mosque	1892	Negeri Sembilan	Vernacular
M6	Peringgit Mosque	1726	Melaka	Sino-eclectic
M7	Kampung Hulu Mosque	1728	Melaka	Sino-eclectic
M8	Tengkera Mosque	1728	Melaka	Sino-eclectic
M9	Kampung Keling Mosque	1748	Melaka	Sino-eclectic
M10	Dato Panglima Kinta Mosque	1898	Perak	Mughal
M11	Sultan Abu Bakar Mosque	1900	Johor	Neoclassical
M12	Sultan Abdul Samad Jame' Mosque	1909	Kuala Lumpur	Mughal
M13	Zahir Mosque	1912	Kedah	Mughal
M14	Sultan Sulaiman Royal Mosque	1934	Selangor	Neoclassical
M15	National Mosque	1965	Kuala Lumpur	Modernistic structuralism
M16	Muslim College Malaya Mosque	1974	Selangor	Modernistic structuralism
M17	Sultan Idris Shah II Mosque	1978	Perak	Modern vernacular
M18	Al-Mujahideen Mosque	1983	Selangor	Modern vernacular
M19	Sultan Salahuddin Abdul Aziz Shah Mosque	1988	Selangor	Postmodern revivalism
M20	Sultan Ahmad Shah State Mosque	1994	Pahang	Postmodern revivalism
M21	Putra Mosque	1999	Putrajaya	Postmodern revivalism
M22	KLIA Mosque	1999	Selangor	Postmodern revivalism
M23	Wilayah Persekutuan Mosque	2000	Kuala Lumpur	Postmodern revivalism
M24	Kota Iskandar Mosque	2014	Johor	Postmodern revivalism
M25	Tuanku Mizan Mosque	2009	Putrajaya	Sustainable contemporary
M26	Al-Ikhlas Mosque	2013	Selangor	Sustainable contemporary
M27	Ara Damansara Mosque	2015	Selangor	Sustainable contemporary
M28	Raja Haji Fisabilillah Mosque	2015	Cyberjaya	Sustainable contemporary

Based on the list of case study mosques as in Table 1, each era of architecture has a style and influence that affects the application of ornamentation in mosque architecture. The style and influence of this architecture were also driven by the factors behind the history of construction, region, architect, socio-culture and so on. Case study is also important in looking back at the history of mosque architecture in Malaysia, which spans hundreds of years ago starting from the arrival of Islam to Malaya, establishing itself and growing rapidly until it became a major religion in shaping society and the identity of the Muslim community in Malaysia.

Through observations made on the exterior and interior components of the case study mosque, a formal analysis was made on the application of motifs such as geometry, calligraphy, vegetal, cosmos and figural as well as materials, colours and ornamentation techniques. Next, these motifs were analysed by frequency to obtain statistic trends or changes in the selection of ornamentation motifs that also reflect the taste of ornamentation in each era. Content analysis was also conducted to identify the development of the application of ornamentation from the traditional to the global era.

4. Findings

The ornamentation motifs in Malaysian mosques included elements of a combination between Islamic ornamentation and Malay traditional ornamentation. In Islamic ornamentation, there are four basic elements according to [33] and [34], namely calligraphy, vegetal and geometry, as well as figural. The principles of Islamic ornamentation prohibited depicting humans, animals or living beings led to the creation of an abstract style in conveying the concept of ornamentation as a worshipping to God, glorifying Him and reflecting on the majesty of His creation [34].

Meanwhile, as concluded by [35] and [36], the motifs in Malay wood carvings are divided into five elements, namely flora, fauna, calligraphy, geometry and cosmos. The creation of natural motifs in traditional Malay carvings reflects the importance of earlier societies that were driven by values centered based on uniqueness, availability, medical resources and also food resources [37]. In summary, there are five decorative elements in Malaysian mosque architecture, namely geometry, calligraphy, vegetal, cosmos and figural.

4.1. Trends of motifs

Table 2 shows the frequency of application of decorative motifs divided according to six architectural eras. The table shows three architectural eras that have the highest number of motifs, namely the postmodern era with 150 motifs, the colonial era with 134 motifs and the pre-colonial era with 105 motifs. This number indicates that these three architectural eras did in fact apply a lot of ornamentation in their mosque architecture. The next three architectural eras show a moderate application of motifs and are much different ranges compared to the postmodern, colonial and pre-colonial eras. The traditional era shows a number of 64 motifs, the global era 53 motifs and the modern era are 42 motifs. The high variance in the frequency of the motifs proves that there are two distinct types of ornamental applications: i) excessive ornamental application and ii) moderate ornamental application.

Frequency analysis of the application of ornamentation motifs further shows trends or changes in the use of motifs across architectural eras as shown in Figure 1. In summary, the researcher discovered that the application of geometric motifs has become increasingly common and are frequently used as themes in modern, postmodern and global eras. This is perhaps because it has universal, straightforward and understandable design elements, as well as having unique and distinctive Islamic symbols and ideas. Meanwhile, in the pre-colonial, colonial and traditional eras, vegetal motifs were applied more frequently than other motifs, followed by the geometry and cosmos. In general, the reason for selections is that the vegetal motif, which also has a very profound philosophy of embellishment by the artist, became meaningful and inspirational in the life of the community at that time.

The use of calligraphic motifs has increased during the global and postmodern eras. Whereby, during the traditional, pre-colonial, colonial and modern eras, the usage of calligraphy motifs is less widespread and is solely concentrated on certain elements such as Qibla walls and pillars. Calligraphy motifs are also largely focused on the interior of the mosque, namely the prayer room and the mihrab, which are

more spiritual and through the application of calligraphic motif can create a spiritual effect and serve as reminder of God's greatness.

Table 2. The frequency of application of ornamentation motifs on the placement of mosque architecture according to the architectural era

		MOTIFS						
ARCHITECTURE ERA	MOSQUE CODE	Geometry	Calligraphy	Vegetal	Cosmos	Figural	Total	Frequency (%)
TRADITIONAL	M1	3	-	5	1	3	12	19
	M2	6	2	5	2	-	15	23
	M3	6	-	5	1	-	12	19
	M4	7	-	3	3	-	13	20
	M5	4	2	4	2	-	12	19
	Frequency (%)	40.6	6.3	34.4	14.0	4.7	64	
PRE-COLONIAL	M6	5	1	11	-	1	18	17
	M7	6	1	11	-	-	18	17
	M8	9	3	19	1	1	33	31
	M9	6	5	22	3	0	36	34
	Frequency (%)	24.8	9.5	60.0	3.8	1.9	105	
COLONIAL	M10	13	-	4	1	-	18	13
	M11	14	-	13	3	-	30	22
	M12	10	-	11	1	-	22	16
	M13	13	8	13	5	-	39	29
	M14	14	2	17	2	-	25	19
	Frequency (%)	47.8	9.5	35.8	9.0	0	134	
MODERN	M15	16	2	-	1	-	19	45
	M16	5	2	-	-	-	7	17
	M17	7	-	-	1	-	8	19
	M18	7	-	-	1	-	8	19
	Frequency (%)	83.3	9.5	0	7.1	0	42	
POSTMODERN	M19	17	7	-	1	-	25	17
	M20	12	5	2	-	-	19	13
	M21	12	2	11	1	-	26	17
	M22	11	6	9	1	-	27	18
	M23	16	5	13	1	-	35	23
	M24	10	5	2	1	-	18	12
	Frequency (%)	52.0	20.0	24.7	3.3	0	150	
GLOBAL	M25	7	3	-	1	-	11	21
	M26	8	3	2	1	-	14	26
	M27	5	2	-	1	-	8	15
	M28	11	6	2	1	-	20	38
	Frequency (%)	58.5	26.0	7.5	7.5	0	53	
	Total	307.0	79.0	162.0	45.0	6.6	600	

In fact, the selection of cosmos and figural motifs in the traditional era is as much used as inspiration more often than those of other eras. Cosmos motifs such as mountains, the sun and stars are selections for use as adornment. While figural motifs were still applied during the traditional era due to the assimilation factor of newly accepted Islamic culture and religion throughout that time. However, these figural motifs are only appearing as abstractions and are typically found in *mastaka* or *tunjuk langit*, roof edges, and *tetupai*, which draw inspiration from imaginary creatures such as dragons, stupas, bird tails and duck tails or serve as symbols for the community's beliefs at that time.

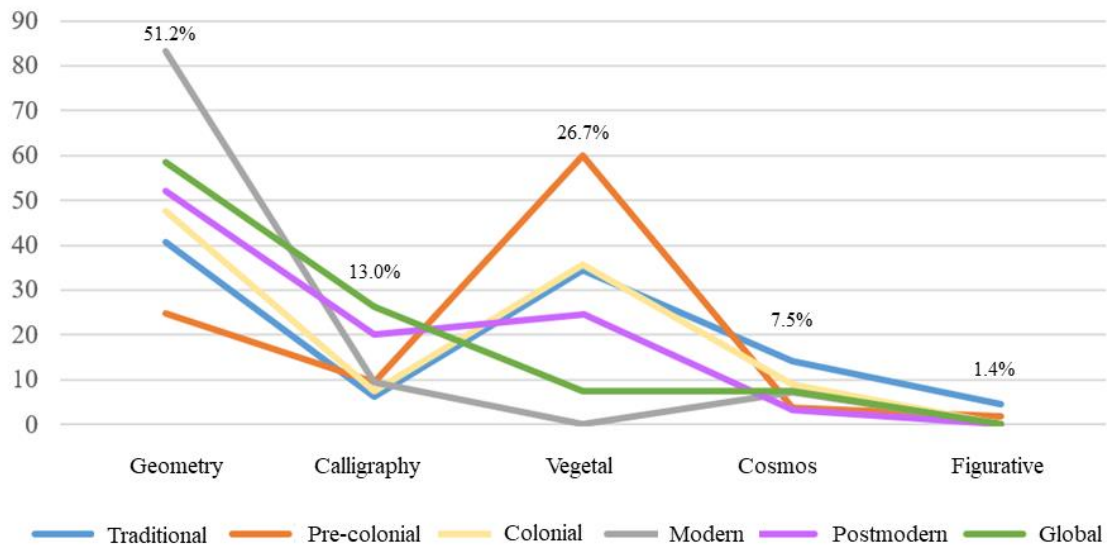


Figure 1. Trends in the application of ornamentation motifs according to architectural era

Analysis of ornamentation motifs on exterior components and interior spaces has been done separately to map the distribution of the application of motifs according to placement and architectural era according to the case study mosque. It can be concluded that each placement employs a certain style or motif in accordance with the suitability of that placement as well as the function of architectural elements and space. For instance, *Mastaka* or '*tunjuk langit*' has evolved to become synonymous with the motif of the cosmos, which includes the symbol of the crescent moon and stars as emblems of the popularity of the Islamic religion. However, during the traditional era, the element pointing upward to the sky, so called '*tunjuk langit*' or '*buah buton*' was a symbol of belief (*tawheed*). During the pre-colonial era, the lotus motif became a symbol of divinity in Buddhist and Hindu religions as shown in Figure 2.



Figure 2. Evolution of motifs on mastaka or '*tunjuk langit*'. From figural abstraction in M1, and vegetal motifs in M7, into cosmos motifs in M12, M24 and M28

Nevertheless, the motifs of ornamentation in each era are varies depending on the architectural philosophies and influences that were prevalent at the time. The great influence of the traditional Malay ornamentation's culture and philosophy served as the foundation for the application of the motifs during the traditional era. The pre-colonial era then had characteristics influenced by Chinese beliefs while also

incorporating Malay and European influences. The colonial era adapted European classical and Mughal elements and adjusted them to fit the Malay motifs. According to different beliefs, cultures and objectives, it can be said that each period has its unique symbols and styles. However, although each motif or element has a different interpretation according to the inspiration and way of life of their culture, they all have a similar philosophy in the form of religious and divine beliefs.

The Malay motifs have been revived in the modern era with a new, universal, and harmonious identity that represents the advancement of a freedom and independent nation. Next, in the postmodern era, motifs inspired by the Middle East became popular. In the global era, universal motifs have been utilized once more to strive to restore the identity of Malaysian architecture with elements of harmony and progress as well as increased functionality, exploring various forms, and industrialized technological materials.

Based on Figure 1 and Table 2, it can be identified that the vegetal motif dominates as the main decorative element in mosque architecture at the beginning, but the application of geometric motifs is increasingly used more widely. One of the contributing factors is the effect of changing tastes or human visions as well as the diminishing availability of artists. In fact, the impact of technological and industrial progress is also a factor in changes of style and ornamentation design. Geometry motifs can be suitable to apply on architectural ornamental structures such as gates, doors, sun shading, and so on because the principle of symmetry creates the effect of balance and strength. Wooden panels, pillars, windows, arches, and wall structures that are carved to smooth the sharp surface, or finished with stucco techniques are also taken into consideration as geometric motifs that aim as a transfiguration of structures and materials where these elements are refined to improve the quality of the structure form in terms of functionality and security. Therefore, the presence of geometric elements is not only for beautification but a complement to architecture, surface, and space.

Other motifs such as vegetal motifs and calligraphy become additional motifs to further enhance the beauty of an architectural element in addition to bringing a sense of spirituality, belief, and culture for example in Figure 3. The purpose of using this motif is to emphasize divine values such as harmony and honor. Nevertheless, higher elements such as domes, arches, door heads, and ceilings are frequently chosen for the insertion of calligraphy. This is due to the fact that calligraphy motifs must be honored and often contain verses from the Quran and hadiths that serve as reminders and the magnificence of God. In terms of the interior space, calligraphy motifs stand out more on the qibla wall, around the dome and mihrab to create a spiritual effect. The motif of the cosmos also has a placement that is located at a high level such as mastaka and door heads. Therefore, crescent and star motifs is synonymous choice on the mastaka, while sun motifs is synonymous choices on the door head.



Figure 3. Motifs trends on ceilings in prayer hall. From vegetal motifs as in M4, M9, M11 to the calligraphy (M15) and geometrical motifs (M25)

4.1.1. Evolution of styles: from traditional to global. The following discussion presents a comparative and descriptive review of the ornamentation application style to explain the factors, influences, and values that shape the ornamentation application in each architectural era, as shown in Figure 4. The evolution of ornamental styles throughout the history of architecture demonstrates how the background, skills, technology, and materials available at the time had an impact on ornamental design, which gives each style its uniqueness. In addition to the sociocultural historical background of the time, supporting factors also play a significant influence in changes in terms of placement focus, motifs, and the use of materials, colours, and techniques.

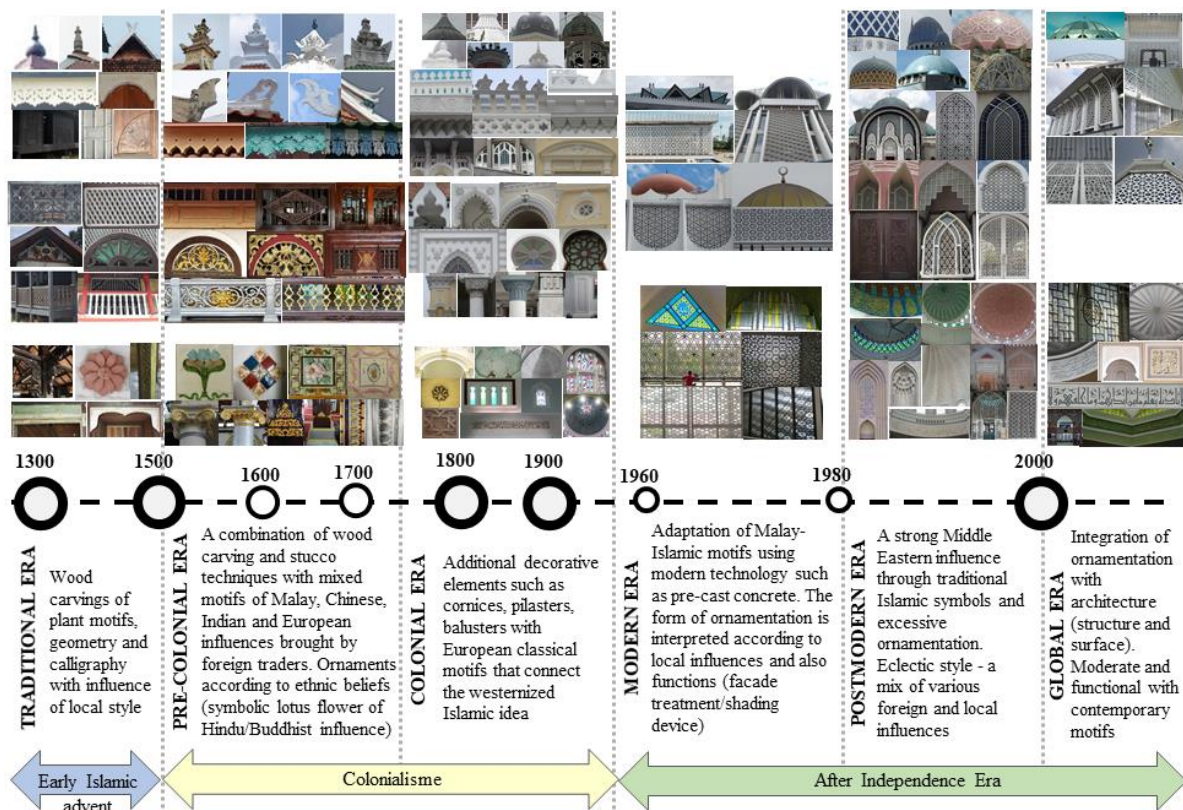


Figure 4. Evolution of styles and design application in Malaysian mosque from traditional to global

Architecture and ornamentation are evolving along with the times, culture, and community needs. [38] states that ornaments, sculptures, and symbols were employed by the Malays during prehistoric and ancient times as media to convey messages and communication tools that were closely related to life practices, religious beliefs, and rituals. Therefore, ornamentation in the traditional and pre-colonial era is seen to highlight the aesthetic value through the beauty of floral, circular, and dense motifs, as in other religious buildings. Although these two eras are roughly concurrent in time, there are differences in the application of various motifs, their frequency, and density, as well as the use of a variety of materials, colours, and techniques.

The ornamentation during the traditional era is more distinctive in its design, local in origin, and made use of natural materials such as wood with carving techniques and patterns that are adapted to local climate. The study concludes that the traditional era demonstrates a good understanding of the ornamentation application that is moderate, practical, harmonious, and at the same time, still possesses spiritual aspects that are of divine and honorable value but are conveyed through local aesthetic qualities.

Meanwhile, the pre-colonial era displayed the application of high values of harmony through the density of placement and ornamentation motifs as well as the employment of various materials, colours, and techniques. This is due to the abundance of foreign influences, including from China, India and Europe that were adapted to the local culture. Nevertheless, according to [39], the distinctiveness of the carvings and motifs in the pre-colonial mosque shows that Chinese carpentry had a significant influence on its ability to transmit deep meaning and value through the application of ornamentation in conveying their beliefs.

However, significant stylistic changes occurred in the colonial era where more decorative elements were introduced, such as cornices, pilasters and balusters with European classical motifs has increased the frequency of embellishment in mosque architecture. The researcher's observations indicate that the

picture of construction progress has begun to be presented more openly by connecting the westernized Islamic idea to the mosque architecture.

The modern era of architecture has also brought about positive changes in the application of ornamentation through integration such as the use of shading devices and facade treatments. Modern architecture emphasizes that the functional aspect and eliminates ornamentation that is considered wasteful. Adaptation of Malay-Islamic motifs using modern technology such as pre-cast concrete in an integrated manner that takes into account regional influences as well as practical considerations. By utilizing structural and functional ornamentation, ornamentation during modern era demonstrates a modern aspiration towards a newly independent nation.

Meanwhile, mosque architecture in the postmodern era has been compared to a phenomenon of the glory of Islam called “Re-Islamization” where at this point, artistic elements from the glory days of Islam has become the main symbols of mosque design so that it is challenging to separate from society's perception. This is due to the understanding of the mosque's function as a spiritual space and closely related to symbolism. Regarding the inspiration of Islamic art, it can increase the divine value that serves as the mosque's spiritual symbol, but after being refined, it must also adopt other values that are more beneficial such as the values of simplicity, usefulness, and progressive, in order to make architecture more sustainable.

After spanning more than 30 years, mosque architecture in Malaysia is seen as not being very progressive with the application of ornamentation styles that repeat the glory days of Islam in the past. Therefore, according to [8], there is a need to promote alternative designs that are more relevant, as well as increase sustainability in mosque architecture in order to adapt to the more advanced and rapid technological changes. In order to preserve the mosque's distinctive architectural style and to take advantage of the most recent advancement in construction technology, this era of global architecture which is competitive introduces newer ideas and designs by taking inspiration from traditional and modern eras to maintain the mosque's architectural identity.

5. Conclusion

The study displays the development of mosque architecture styles and influences within a certain architectural era that also influences the ornamentation style of mosque. Meanwhile, as a spiritual function of mosque, ornamentation is seen as the essence of mosque architecture. The fundamental requirement for mosque architecture is that it must serve as a mosque, a place of worship for Muslims. Mosques shouldn't just be excessively ornamented and embellish to denote power or wealth. A mosque main purpose must be to serve as a hub for the Muslim community. Thus, the primary purpose of mosque must be present regardless of the architectural styles been adapted. It should be re-emphasized that the spiritual meaning, function, and principle should remain unchanged despite the variations in mosque form and styles. It is significant to consider how Islam came to Malaysia and evolved into the nation's unifying religion throughout its long history, which spans hundreds of years.

The research findings show that several factors, including regionalism, colonialism, politics, economics, and socioculture have shaped the influences and styles of Malaysian mosques and ornamentation. This study is significant in explaining the development of aesthetic preference and the application of ornamentation across the eras as well as classifying the ornamentation style in each architectural era to enrich the discourse of architecture in Malaysia and build a framework of ornamental design features that have a national identity. In conclusion, ornamentation is important and necessary during contemporary era in order to present a design that adds value through the integration of beneficial, moderate and progressive, as well as maintaining the importance of spiritual, functional and sustainability. In addition to being able to preserve the spirituality of mosque, realizing the purpose and meaning behind the application is crucial so that its presence can enhance the functionality of mosque architecture.

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