

THE PATTERN OF HERITAGE MOSQUE EXPANSION IN MELAKA AND ITS IMPACT ON CULTURAL SIGNIFICANCE

**Sahrudin Mohamed Som^{1*}, Mohammad Rusdi Mohd Nasir²,
Wan Saiful Nizam Wan Mohamad³ & Izati Nabila Marzuki⁴**

***Corresponding Author**

¹Faculty of Creative Technology and Heritage

Universiti Malaysia Kelantan 16100 Kota Bharu, Kelantan, MALAYSIA

^{2,3}Faculty of Architecture and Ekistics

Universiti Malaysia Kelantan 16100 Kota Bharu, Kelantan, MALAYSIA

⁴Faculty of Business and Communication

*Universiti Malaysia Perlis (UniMAP), Pusat Perniagaan Pengkalan Jaya,
Jalan Alor Setar-Kangar, 01000 Kangar, Perlis, MALAYSIA*

sahrudinms@umk.edu.my^{1*}, rusdi.mn@umk.edu.my²,
saifulnizam@umk.edu.my³, izatinabila@unimap.edu.my⁴

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ABSTRACT

Mosque expansion is commonly done to accommodate growing congregations and improve facilities. However, for heritage mosques, expansion poses challenges by potentially affecting their cultural significance. This study examines the expansion patterns of Sino-Eclectic heritage mosques in Melaka and their impact on form, fabric, and function. Using qualitative methods, including observation and expert interviews, four case studies—Kampung Hulu Mosque, Tengkeria Mosque, Kampung Duyong Mosque, and Serkam Pantai Mosque—were analysed. Findings show that expansions primarily occur at the left, right, and front verandas, rather than the qibla wall. Two approaches were identified: direct extensions from the original structure and separate structures connected by narrow pathways. These expansions affect architectural value by reducing appreciation for the original design while enhancing functionality. Roof shape, size, placement, and colour influence architectural perception. This study provides guidance on compatible expansions, emphasizing a balance between preserving tangible and intangible heritage values.



Keyword: *Conservation, Cultural significance, Expansion, Heritage Mosque, Sino-Eclectic style*

INTRODUCTION

Mosques are vital institutions for Muslims worldwide, serving as central hubs for communal worship and spiritual activities. Historically, since the advent of Islam, mosques have played extensive roles beyond their religious functions, acting as centres for administration, welfare, education, socialization, and cultural preservation (Abd Rahim, S.A. et al., 2022; Omer Spahic, 2019; Baharudin et al., 2014). Given their multifaceted nature, mosques inevitably undergo development and change, including expansions and renovations, to accommodate growing congregations and enhance existing facilities. In Malaysia, for instance, mosques have seen significant expansions ranging from 42% to 313% over a span of 15 years to meet these increasing demands (Norliza M.I., 2007).

This phenomenon of mosque expansion is not unique to newly built structures but also affects heritage mosques, including those with Sino-Eclectic architectural styles that define Melaka's cultural landscape. According to the Department of National Heritage, nearly all Sino-Eclectic mosques in Melaka have undergone and continue to undergo expansions due to their originally small sizes, which were suitable for the smaller congregation size at the time of their construction. However, the addition of new structures to these heritage buildings presents significant challenges in the field of conservation (Guzmán-Torres, 2009; Soosani, L., 2013). Such interventions are often seen as potential threats to the cultural significance of these buildings (Guzmán-Torres, 2009). Therefore, meticulous conservation efforts are crucial to preserving the cultural value of these historical sites (Atalan Ö., 2018).

This study aims to deeply understand how the expansion patterns of heritage mosques in Melaka impact their cultural significance, guided by the Cultural Heritage Model developed by Frank Matero (2006). The research will help identify critical considerations for expanding heritage mosques, particularly those with Sino-Eclectic styles. The findings can contribute to the development of detailed guidelines for the preservation and expansion

of Melaka's heritage mosques. They also address the current guidelines' limitations, which are often too general and overlook specific cultural and architectural contexts. This aligns with Hossam Mahdy's (2019) perspective on the importance of high-standard, tailored guidelines for heritage mosque management that vary according to location and cultural context.

LITERATURE REVIEW

Heritage Mosques in Melaka

Melaka embodies a rich blend of tangible and intangible cultural heritage, shaped by its role as a major international trade hub for over 500 years. Its strategic location attracted diverse ethnicities, including Chinese, Arabs, Indians, Malays, and Europeans, fostering a unique cultural exchange. This fusion is evident in Melaka's heritage mosques, which integrate architectural influences from Dutch, Javanese, Chinese, Indian, and Malay styles (M Surat et al., 2011). Utaberta, N. et al. (2010) classify these mosques as Sino-Eclectic, characterized by Chinese architectural elements blended with other styles. Unlike traditional Malay mosques in rural areas, Sino-Eclectic mosques are primarily urban and date back to the Dutch colonial era (1700s). During the Portuguese conquest of 1511, many non-Christian places of worship were destroyed. However, the Dutch, after defeating the Portuguese, allowed mosque reconstruction under the Dutch East India Company's (VOC) policy of religious tolerance, even providing funding (N.A. Yusof et al., 2014).

These mosques fall under the 'regional-influenced mosque' category of vernacular architecture. A defining feature is their slightly elevated floor, akin to Indonesian mosques, along with an octagonal minaret and a multi-tiered pyramidal roof (Utaberta, N. et al., 2010). Spatially, they follow an open floor plan, typically square with a veranda surrounding the main prayer hall (M Surat et al., 2011). Their primary materials include plastered brick walls, wooden roof frames, and clay tiles. Decorative cast iron motifs, as seen in Kampung Keling Mosque, and perforated wooden panels adorn doors, windows, columns, and ceilings. Tiles, particularly on staircases, mirror traditional Melaka house designs, while stone fences and gateways

resemble Chinese temples (Utaberta, N. et al., 2010). A. Halim Nasir (1984) suggests that these features reflect the craftsmanship of artisans from Java and Sumatra who migrated to Melaka during that era. The distinctive Sino-Eclectic style of Melaka's heritage mosques underscores the city's historical multiculturalism, merging influences from various regions into a unique architectural identity.

New Addition to Heritage Building

Heritage buildings serve as tangible links to history, aesthetics, and culture, fostering a sense of place and community connection (Nik Hashim et al., 2024; Norwalk Tomorrow, 2019). However, as these buildings age, the need for new additions arises, creating a challenge in conservation since such modifications can threaten their cultural significance (De la Torre, M, 2014). According to Federica Appendino (2017), this issue has gained attention as conservation is increasingly recognized as a key aspect of sustainable development.

Heritage conservation aims to preserve authenticity and aesthetic value while ensuring functionality, which includes accommodating modifications and additions. Allowing these modifications is essential to prevent heritage buildings from falling into neglect and misuse, or sustaining damage (Gulsen Disli, 2018). However, new additions must align with compatible design principles established by conservation experts, as outlined in international charters and guidelines (Khalaf, 2015). Since the 1980s, conservation has shifted from a material-based to a value-based approach, influencing recommendations for best practices in heritage site development (Poulios, 2014).

The Venice Charter (1964) was among the first to address the integration of new components into heritage buildings. Articles 12 and 13 of the charter emphasize harmonious integration, discernibility, and minimal interference with original features. This principle was reinforced in subsequent guidelines such as the Resolutions of The Symposium on The Introduction of Contemporary Architecture into Ancient Groups of Buildings (1972), the Recommendation Concerning the Safeguarding and Contemporary Role of Historic Areas (1976), and the Washington Charter (1987).

The Burra Charter (1999) expanded conservation considerations beyond physical design to include intangible aspects. This broader perspective was further developed in later documents such as the Vienna Memorandum (2005) and the Recommendation on the Historic Urban Landscape (2011), which highlight the diverse cultural significance of heritage buildings and the importance of stakeholder involvement.

As heritage conservation evolves, integrating new additions remains a complex issue requiring a balance between preserving cultural significance and allowing for functional adaptation, guided by international best practices.

RESEARCH METHODOLOGY

This study employed a qualitative approach with a case study analysis, focusing on four heritage mosques in Melaka: Kampung Hulu Mosque, Tengkeria Mosque, Kampung Duyong Mosque, and Serkam Pantai Mosque. These mosques were selected based on two criteria: first, they are gazetted under the National Heritage Act 2005 (Act 645), and second, they have undergone extensive expansion work. Two types of data, primary and secondary, were utilized in this study. Primary data were collected through two methods: on-site observations focusing on the physical development and changes of the mosques, the design characteristics of new additions, and patterns of space usage; and interviews with selected respondents. The respondents included four representatives from the committees of each mosque and four conservation experts, consisting of architects recognized as registered conservators.

Secondary data were sourced from books, journals, historical records, measured drawings, and previous research findings. In analysing the data, the Cultural Heritage Model introduced by Frank Matero (2006) was used as a basis to comprehensively identify the impact of mosque expansion patterns on cultural heritage values, covering three main aspects: form, fabric, and function. According to Matero's model, compatible new developments of heritage buildings can be evaluated based on those aspects. By assessing how changes affect the building's physical appearance (form), structural integrity and materials (fabric), and usage (function), this model

encourages balanced and comprehensive development by incorporating all three aspects. The study's findings are presented through a comparative analysis, highlighting the expansion patterns occurring in each mosque and their implications for the three aspects of cultural heritage. Throughout the study, ethical considerations were fully observed, ensuring respect for the cultural and religious significance of each mosque.

RESULTS

Research findings have shown that all four mosques studied have undergone expansion, with the Serkam Pantai Mosque experiencing the most significant increase at 288% of its original size, while the Kampung Hulu Mosque showed the smallest increase at 143%. Each mosque had undergone expansions in different eras and years, as illustrated in Figures 1, 2, 3, and 4 below. To discuss these findings, three aspects of cultural heritage; form, fabric, and function were used to explain the expansion patterns that occurred in the four mosques studied and their impact on cultural significance.

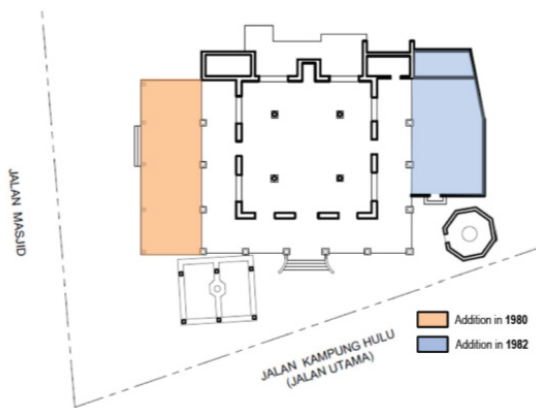


Figure 1. Floor Plan shows the Expansion of Kampung Hulu Mosque
(Source: Author)

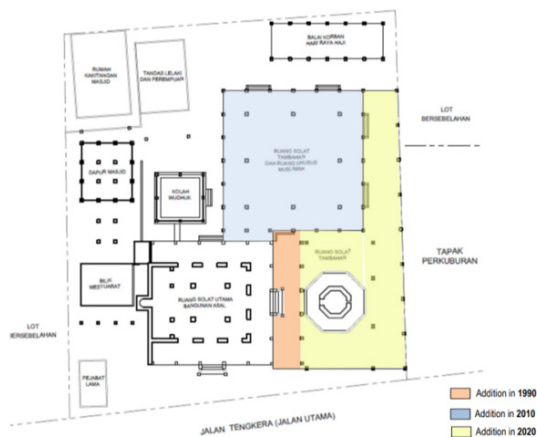


Figure 2. Floor Plan shows the Expansion of Tengkerah Mosque
(Source: Author)



Figure 3. Floor Plan shows the Expansion of Kampung Duyong Mosque
(Source: Author)

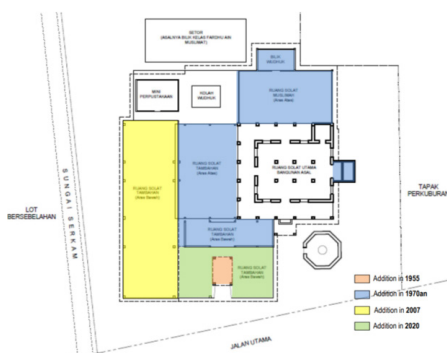


Figure 4. Floor plan shows the expansion of Serkam Pantai Mosque
(Source: Author)

Form

Expansion involving the construction of new structures was found to have significantly altered the form of these buildings. The Sino-Eclectic architectural style, characterized by tiered pyramidal roofs, square floor plans, and specific decorative elements, embodies rich aesthetic and cultural values that are crucial to preserve (Armani, S. & Arbi, E., 2014). The study reveals that the most prominent features influencing the expansion patterns of Melaka's heritage mosques, in terms of form, are the placement and design style of the new additions. The location and design characteristics of these additions have significant effects on the cultural significance of the mosques as follows:

a) Placement

The study reveals that the lots of the mosques are fundamentally divided into two sections: the mosque site and the cemetery site. On-site inspections found that nearly the entire mosque site has been utilized for building structures, whether as individual buildings or extensions to the existing main structure, except for Tengkeru Mosque. At Tengkeru Mosque, an open area still exists behind the original mosque designated for the annual Eid al-Adha qurban activities.

The study also identified patterns in determining the areas or locations for new construction at the initial stages of expansion for all four mosques examined. The placement of additional buildings was influenced by two

main factors: the availability of vacant land and the position of the site away from the main road or behind the original mosque. All initial expansion structures were built in this position, indicating an awareness among mosque administrators to choose expansion sites that do not obstruct the view of the original mosque facade from the main road.

Observations further revealed that no expansion structures were built behind the mosque's qibla wall. This is because the primary purpose of mosque expansion is to provide additional space for congregants during large gatherings, such as Friday prayers and the two Eid prayers. Constructing additional space behind the qibla wall would render it unusable as it would place the congregation in front of the imam, contrary to the rules of congregational prayer. Moreover, expansion on the sides of the mosque facing the main road is also minimal, except for Kampung Duyong Mosque, where a semi-arched roof structure partially obstructs the mosque facade, affecting the general appreciation of the mosque's architectural beauty. This finding underscores the importance of considering the visual and functional impact of new structures on the original mosque, particularly in preserving its cultural and aesthetic significance.

b) Design Style

Various architectural styles and designs have been employed in the construction of new additions to the studied mosques, varying by year and phase of construction. Kampung Hulu Mosque features only two differing design styles, whereas Serkam Pantai Mosque exhibits the most diversity with four distinct design styles. Roof structures play a significant role in highlighting the design character of new additions when viewed from the main road. Four types of roofs have been used in the expansions: pyramidal (Meru) roofs, flat roofs, monopitch roofs, and semi-arched roofs. The use of pyramidal roofs creates visual continuity with the original mosque's roof, thus achieving a harmonious overall design compared to other roof types.

The design of the additional building structures predominantly employs contemporary styles reflective of the era in which the expansions were made. Observations indicate two types of structural forms for the additions: walled and non-walled structures. Most of the additional spaces are built without walls, while only a small portion is walled, primarily the areas designated for female congregants. Two types of floor constructions

have been identified in the additional structures of the studied mosques: elevated floors and ground-level floors. Most of the elevated floors are built at the same level as the original mosque's veranda or slightly lower. These floors are typically directly connected to the veranda, as seen in Kampung Hulu Mosque, Kampung Duyong Mosque, and Serkam Pantai Mosque. Conversely, the ground-level floors, which are built flush with the ground, are mostly used for the outermost additional spaces, commonly found at Serkam Pantai Mosque.

Fabric

The fabric of a heritage building encompasses the materials used and the construction technologies or methods employed, serving as symbols of the cultural identity of the constructing community (Syahirah Mohd Noor et al., 2019). The specific use of construction materials in mosques, such as the application of lime plaster and traditional construction such as carpentry techniques, constitutes tangible evidence of the cultural heritage regarding the knowledge and technological advancements of past communities in Melaka. Therefore, preserving the fabric, which includes both materials and construction technologies, is crucial for safeguarding the authenticity and integrity of Melaka's heritage mosques. Research findings indicate two aspects related to the fabric in the expansion of mosque studies that also impact the cultural significance as follows:

a) Original Elements and Structures

On-site observations revealed that elements and structural components of the original mosques were demolished to accommodate expansions by connecting new structures to existing ones. Among the most frequently demolished elements are the stairs and balustrades in the veranda section, as seen in Kampung Hulu Mosque, Kampung Duyong Mosque, and Serkam Pantai Mosque. Of the four mosques studied, only Tengkeri Mosque retains the entire original staircase because the new additional structures are not fully connected to the mosque's veranda structure; instead, they are built separately and connected with small connecting floor structures. The construction of additional low-built floor spaces at ground level also helped preserve staircase structures, as observed in Tengkeri Mosque and Kampung Duyong Mosque.

b) Materials and Construction Technologies

Various materials and construction technologies have been employed in the expansion of the case study mosques. Observations revealed a commonality in the use of two main types: reinforced concrete-based and steel frame-based construction. Wooden construction is only found in the Tengkeria Mosque, specifically in the 1990 addition. Reinforced concrete is commonly used for the construction of large new additions and is built directly connected to the original mosque building, as seen in Tengkeria Mosque, Kampung Duyong Mosque, and Serkam Pantai Mosque. Steel frame construction is largely utilized for constructing additional structures with smaller footprints, involving narrow areas, and typically constitutes the final phase of expansion for each mosque. However, the use of reinforced concrete and steel materials has also been combined, such as in all new additional floor constructions built using reinforced concrete, while steel is used for roof structures on concrete-based additions, as observed in Serkam Pantai Mosque.

Function

Besides being expressed through architectural works, the cultural significance of heritage mosques also lies in their role as local community centres and centres of religious activities. The orientation and spatial layout of mosques are closely linked to the way worship rituals are conducted and the dynamics of social interactions among community members (Baharudin N A et al., 2014). Therefore, heritage mosques in Melaka play a crucial role in fostering community cohesion and shaping the cultural identity of the local community. Furthermore, the expansion of mosques through new structures has been found to impact cultural significance based on their functionality as follows:

a) Space for 'Ibadah' (Worship) Rituals

The primary objective of mosque expansion is to provide additional space to accommodate the growing congregation and to provide specific spaces for community activities. Findings revealed consistent patterns in space utilization across all mosques studies, wherein mosque expansion has resulted in the creation of three main types of spaces with distinct functions and purposes. The first space is the main prayer hall located within the original mosque premises, where the imam leads congregational

prayers and delivers sermons. This space also serves as the centre of the five daily prayers. The second space comprises additional prayer areas, a significant portion of which is formed through the construction of new annexes and is predominantly occupied during specific times, particularly during Friday prayers, Eid prayers, and events involving large gatherings such as the celebration of Maulid Rasul and inaugural kuliah. This space also encompasses the original mosque's veranda, as it remains unoccupied by worshippers during the five daily prayers. The third space is dedicated for women, located within the new additions, but it is flexible; in the absence of female worshippers, it can also be used by men, especially during Friday prayers.

b) Community Activity Centre

Besides being used for activities related to worship practices such as solat, dzikir, and Quranic recitation, new spaces have also been constructed to accommodate activities involving the local community or congregation members. For example, a dedicated space for women at the Kampung Duyong Mosque hosts Tajweed and Fardhu Ain classes for women on weekday mornings. Additionally, Kampung Hulu Mosque is well-known within the local community and beyond for holding Tahlil events, as it is believed to bring barakah. Information from a kariah member of Tengkeri Mosque also highlighted the use of additional space for qurban activities during Eid al-Adha celebration, where preparation and distribution of meat take place. The additional space at Tengkeri Mosque also frequently serves as a place for nearby school students to conduct religious classes, particularly those involving practical learning such as congregational prayer and ablution practices.

DISCUSSION

Form

Based on the findings, it can be concluded that the placement of new additions was a priority when expansion was planned. Two main factors guided the decisions of the mosque community and administrators regarding the placement of these additional spaces: adherence to religious principles and appreciation of the original structure. Adherence to religious principles

was demonstrated by avoiding expansions behind the qibla wall, as this would contradict the conditions for congregational prayers. At the same time, appreciation of the original building was evident in the absence of new structures obstructing the mosque's visibility from the main road. According to Sarihan, E. (2021), the visibility of a heritage building plays a crucial role in attracting public interest to its appearance, meaning, and patterns, which indicate its cultural and historic essence.

The diversity of design styles in new additions to mosques was found to significantly impact the architectural value, which is a key component of their cultural importance. Using design styles that closely resemble the original mosque is considered more sympathetic and respectful compared to structures that appear foreign. Visual continuity through similar design helps mitigate the impact on the cultural significance of the mosque. However, the adaptation of design styles needs to be harmonized with other design elements such as scale, height, size, colour, and rhythm. The application of different styles in terms of materials and forms is seen as less compatible because it fails to create visual continuity and lacks contextual harmony with the heritage mosque.

Fabric

The staircases and balustrades in these mosques are key elements that define the Sino-Eclectic style. Built with high aesthetic value, they are adorned with decorative tiles like those in traditional Melaka houses, serving as a welcoming feature for visitors (Roslan Talib et al., 2011). Typically, these mosques have three main staircases connected to the front, right, and left verandas. Like other architectural components in Sino-Eclectic mosques, the staircases exhibit a blend of local and Southern Chinese design styles, with influences from Hindu-Buddhist structural forms (Armani, S. & Arbi E., 2014). However, the demolition of staircases and balustrades during expansions has impacted the architectural authenticity and integrity of these mosques, leading to the loss of some design elements and diminishing their cultural significance.

International guidelines, such as the Burra Charter (1999) and the Resolutions of the Symposium on the Introduction of Contemporary Architecture into Ancient Groups of Buildings (1972), emphasize

the importance of using distinguishable and reversible materials and construction technologies for new additions. Using materials different from the original mosque construction helps prevent confusion among the public in understanding and appreciating the cultural significance of heritage mosques compared to the new additions. Reversible construction technology ensures that the additions can be dismantled without damaging the heritage structure when the opportunity arises (Burra Charter, 1999). The study findings show that new additions made with concrete are harder to distinguish than those using steel. Furthermore, concrete additions are inherently permanent and often constructed in early expansion phases, directly connected to the heritage mosques. This permanence means these additions cannot be removed without damaging the mosque's fabric and structure, which are crucial attributes of the cultural significance of Melaka's heritage mosques.

Function

The space of Sino-Eclectic mosques is divided into two main areas: the main prayer hall and the veranda. The area designated for female congregants is also within the main prayer hall, separated from the male congregants by curtains or partitions. This spatial organization facilitates community activities, such as routine worship and religious gatherings (Hamed et al., 2022). Observations on the spatial use for ritual practices indicate that the expansion of heritage mosques in Melaka has indirectly created three spiritual layers. First, the main prayer hall is considered the most blessed space (berkat), followed by the veranda, which acts as a buffer to the main prayer hall, and finally, the additional prayer areas, which are seen as less spiritual and more casual, serving as venues for gatherings and resting spaces when not used for congregational prayers. This formation of more specialized spatial functions reinforces the mosque's role as a crucial religious institution shaping the cultural identity of the local community.

Scholars widely discuss the role of the mosque as a community hub, emphasizing that these institutions serve more significant roles than merely places of worship for Muslims. Awaliyah D. N. (2023) similarly notes that traditional mosques function as the heart of the Muslim community, facilitating not only ritual worship but also social activities that strengthen community bonds, such as religious gatherings, daily prayers, and special

events like Eid celebrations. The increased number of mosque users is a primary reason for the expansion of heritage mosques in Melaka. This aligns with the growing interest among community members to use the mosque as a centre for both religious and social activities, reflecting the cultural values and identity of the community.

CONCLUSION

The expansion of heritage mosques in Melaka reflects a balance between tradition, modernity, and preservation. Using Frank Matero's cultural heritage model, this study examines how expansion affects a mosque's cultural significance based on its form, fabric, and function. Additions are guided by religious principles while ensuring the visibility of the original structure to preserve its heritage value. Maintaining the original architectural style supports visual continuity, but challenges arise from the removal of key elements like staircases and balustrades or the use of permanent materials that threaten authenticity. The use of reversible materials can help mitigate these risks. Expansions enhance mosque functionality by providing space for community activities while reinforcing their religious and social roles. This transformation reflects the evolving cultural identity of Melaka's mosque communities, where tradition and modern needs converge. Ultimately, the expansion of heritage mosques in Melaka demonstrates a careful approach to preservation, balancing modernization with respect for historical and architectural integrity.

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All authors contributed to the preparation of this manuscript and approved the final version.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

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