

Woodcarving Motif and Significance in the Malay House of Perak

Iryani Abdul Halim Choo¹, *Nazrul Helmy Jamaludin², Mohd Sabrizaa Abdul Rashid³

¹Architecture Program, Universiti Teknologi MARA, Perak Branch, Seri Iskandar Campus, Perak, Malaysia

^{2,3}Centre for Knowledge & Understanding of Tropical Architecture & Interior (KUTAI), Perak, Malaysia

¹iryan542@uitm.edu.my, ²nazrul998@uitm.edu.my*, ³mohds637@uitm.edu.my

*Corresponding author

Received: 1 June 2025; Accepted: 31 August 2025; Published: 1 September 2025

ABSTRACT

Woodcarving motifs in traditional Malay houses transcend mere ornamentation, serving as cultural signifiers that express identity, belief systems, and a deep connection with the natural environment. In Perak, the Rumah Limas Bumbung Perak (RLBP) exemplifies this tradition through intricately carved fascia boards, wall panels, ventilation screens, and door heads. This study examines the typology, symbolism, and cultural significance of these motifs through qualitative field research on six RLBP case studies selected for their authenticity and preservation of original carvings, using non-intrusive observation, high-resolution photography, and scaled drawings. Findings show that floral and lattice motifs dominate, often arranged in Awan Larat compositions that combine aesthetic refinement with symbolic meaning rooted in Islamic philosophy and Malay cultural values. The absence of figurative motifs reflects adherence to Islamic artistic principles, while the prominence of floral forms underscores the community's reliance on and reverence for nature. Motifs are deliberately selected to convey auspiciousness, social standing, and spiritual reminders, linking craftsmanship to intangible cultural narratives. This study contributes to the body of knowledge by documenting and analysing a lesser-studied regional variation of Malay woodcarving, offering valuable reference material for heritage conservation, restoration projects, and the sustainable integration of traditional motifs into contemporary architecture.

Keywords: woodcarving motif, decorative architectural components, Rumah Limas Bumbung Perak, awan larat motif, floral motif



ISSN: 2550-214X © 2025. Published for Idealogy Journal by UiTM Press. This is an Open Access article distributed under the terms of the Creative Commons Attribution-No Commercial-No Derivatives License (<http://creativecommons.org/licenses/by-nc-nd/4.0/>), which permits non-commercial re-use, distribution, and reproduction in any medium, provided the original work is properly cited, and is not altered, transformed, or built upon in any way.

1 INTRODUCTION

In traditional Malay houses, motifs are far more than mere decorative features; they serve as powerful cultural signifiers that embody identity, belief systems, and an enduring relationship with the natural environment. Incorporated into carved timber panels, fascia boards, wall ventilation screens, and other architectural components, these motifs fulfil both functional and symbolic roles, reflecting a holistic design philosophy in which aesthetics, environmental adaptation, and cultural values are inseparably intertwined. Their creation demands highly skilled craftsmanship, with patterns carefully selected to reflect the homeowner's values, social standing, or aspirations. Traditionally, these carvings were produced by tukang ukir (master carvers) whose skills were transmitted across generations, ensuring the preservation of regional carving styles and distinctive motif vocabularies. Within Malay architecture, a wide variety of motifs is employed in the decorative architectural components of the

house, contributing significantly to its identity and overall architectural character. These decorative components are more than embellishments; they function as carriers of cultural meaning, symbols of social status, and demonstrations of artisanal excellence. Their form, placement, and function vary among different Malay house types across the regions, yet collectively they shape the visual richness and cultural identity of Malay vernacular architecture. Perak, a state with a deep historical lineage linked to the Malacca Sultanate (Basri, 2016), possesses a rich legacy of traditional architecture. Among its most distinctive forms is the Rumah Limas Bumbung Perak (RLBP), characterised by the Bumbung Potong Perak or Potong Belanda roof form—an elegant multi-ridged design that represents both functional ingenuity and aesthetic refinement, integral to Perak Malay identity.

As globalisation increases and tourism grows, the impact on nation's heritage authenticity and cultural identity becomes more apparent (Mohd Anuar et al., 2023). In contemporary practice, carved architectural components are increasingly integrated into modern designs to evoke the nation's identity through the traditional Malay architecture character; however, inappropriate applications risk distorting historical authenticity and misrepresenting cultural identity. Malay identity is vital for preserving national uniqueness, preventing cultural overlap, and upholding dignity, as each nation possesses distinct heritage that should be respected and protected (Zainal Abidin et al., 2024). This concern is compounded by the pressures of rapid urbanisation, the decline in timber construction, and the erosion of artisanal carving skills, placing many traditional motifs in danger of disappearing entirely, preserved only through archival documentation. Preservation through systematic documentation and scholarly research is therefore essential—not only to safeguard tangible heritage but also to protect the intangible cultural narratives embedded within these carvings. As Ahmad et al. (2024) note, woodcarvings do more than enhance the physical environment; they encapsulate the cultural and social narratives of the Malay community, reinforcing their role as enduring expressions of cultural identity. Within this context, the study of motifs in traditional Malay houses becomes a crucial step in understanding and sustaining Malaysia's vernacular heritage. Accordingly, this research analyses the significance of woodcarving motifs adorning the decorative architectural components of one of Perak's most distinctive traditional houses—the Rumah Limas Bumbung Perak.

2 LITERATURE REVIEW

2.1 Malay Woodcarving Tradition

The Malay woodcarving tradition forms an integral part of Malaysia's cultural heritage, embodying the creativity, craftsmanship, and identity of the Malay community. Its motifs—often inspired by nature, flora, fauna, and Islamic principles—are deeply symbolic, representing identity, belonging, and worldviews beyond mere decoration (Ahmad & Aziz, 2022; Ahmad et al., 2024; Muhammad & Rosdi, 2023). As Ahmad and Aziz (2022) note, these carvings encapsulate cultural values and customs, making them essential to vernacular architecture. Historically, woodcarving adorned Malay houses, mosques, and royal palaces, where intricate designs enriched key architectural elements and reflected evolving cultural and artistic influences.

2.2 Motif

A defining characteristic of traditional Malay woodcarving is its profound connection to natural and cultural symbolism. Motifs frequently draw inspiration from flora, fauna, geometric shapes, or their combinations, embodying both the beauty of nature and the cultural values of the Malay community. For instance, Novita et al. (2020) describe how woodcarving motifs in Aceh incorporate geometric patterns and natural elements such as clouds and stars, communicating meanings that extend beyond

mere aesthetics. In Johor, such motifs not only enhance the visual appeal of structures but also contribute to the region's architectural heritage, underscoring the importance of sustainable management for these cultural assets (Yusof et al., 2023). Islamic influence also plays a pivotal role, particularly in Johor, where motifs are stylised to comply with Islamic principles—emphasising floral and geometric forms while avoiding figurative representation. Yusof et al., (2022) argue that the widespread motifs in Johor reflect a cultural synthesis shaped by Islamic aesthetics, illustrating the adaptability of traditional art forms to diverse cultural frameworks while retaining local traditions. Regional variation further enriches this heritage: Ahmad (2025) & Ahmad et al., (2024) note that Kuala Pilah's woodcarvings exhibit a distinctive mix of fauna, flora, and geometric designs shaped by the area's cultural context, while in Malacca, examples such as the Rumah Mohd Hassan reveal motifs that convey historical narratives and aesthetic values, showcasing the enduring craftsmanship of Malay architecture (Gazali & Abd Aziz, 2024).

2.3 Malay Architecture Design Principle

The principles of Malay architecture are deeply rooted in cultural, belief, environmental, and social contexts, reflecting the identity and aesthetics of the Malay community. Shaped over centuries, this tradition draws from local materials, climatic conditions, and cultural values, embodying philosophical concepts and symbolic meanings that define the Malay cultural landscape. A key principle is the use of natural materials, particularly timber, valued for its abundance and suitability to the tropical climate. The design of traditional houses combines symbolic and aesthetic refinement with functional advantages in thermal comfort and ventilation (Mohd Nawayai et al., 2020). Large overhangs, elevated floors, and open layouts enhance passive cooling and shading (Abdul Halim Choo et al., 2024). Decorative motifs of flora, fauna, and geometric forms serve aesthetic, symbolic, and cultural purposes (Ahmad et al., 2022 & Said, 2012). Islamic influences enrich design vocabulary, while historical shifts, including colonial impacts, demonstrate adaptability without compromising cultural essence (Syala et al., 2020 & Utaberta & Spalie, 2011)

2.4 Rumah Limas Bumbung Perak (RLBP)

One of the most distinctive architectural styles in Perak, traceable to the 19th century, is the Bumbung Potong Perak or Potong Belanda roof form, more widely known as the Rumah Limas Bumbung Perak (RLBP). This typology, characterised by its refined multi-ridged roofline, encapsulates both functional and aesthetic attributes that are emblematic of Perak Malay identity. The spatial configuration of the RLBP commonly comprises the Rumah Ibu (main hall), Rumah Anjung, Rumah Selang, and Rumah Dapur (kitchen), complemented by transitional spaces such as the anjung, serambi, ruang tengah, and ruang dapur, reflecting the socio-cultural values and lifestyle of the Perak Malay community. The carved decorative elements of the RLBP are traditionally positioned at prominent architectural locations, including the roof eaves (papan cucur atap), wall bases (papan cantik or pator), above windows and doors, on internal walls, and at the serambi or front porch (Yaa'cob, Yusof, & Nordin, 2021). Rashid et al., (2018) identify a total of 14 decorative architectural components in the RLBP: Tunjuk Langit, Kepala Cicak Types L and I, Papan Cantik, Lubang Angin Luar and Dalam, Gerbang Luar and Dalam, Papan Manis, Pagar Musang Serambi, Kepala Tingkap, Pagar Musang Tingkap, and Kepala Pintu Luar and Dalam.

3 METHODOLOGY

This study employed a qualitative research design using a case study approach to facilitate an in-depth examination of woodcarving motifs in the Rumah Limas Bumbung Perak (RLBP). The method was chosen for its capacity to integrate contextual, historical, and cultural perspectives in interpreting

architectural ornamentation. Purposive sampling was applied to select six case study houses across various districts in Perak, based on four inclusion criteria: (1) an age of over 80 years to ensure historical authenticity; (2) the presence of the distinctive RLBP roof form, a marker of Perak's vernacular identity; (3) retention of original or well-preserved decorative woodcarvings—such as *papan pemeleh*, wall panels, *tebar layar*, and *tetupai*—representative of traditional craftsmanship; and (4) adequate structural integrity to permit safe observation and documentation. Data collection involved non-intrusive field observation of decorative architectural components, measured drawing of details and supplemented by high-resolution digital photography for detailed visual documentation. Scaled drawings were prepared using 2D AutoCAD to accurately capture form, proportion, and intricate design details. Field notes were systematically compiled to record motif type, placement, physical condition, and contextual architectural relationships.



Figure 1 The 6 samples of RLBP chosen for the study (Source: Author, 2025)

4 FINDINGS & DISCUSSIONS

4.1 Motif in Decorative Architectural Components of RLBP

The analysis of the decorative architectural components of the Rumah Limas Bumbung Perak (RLBP) identified five primary motif types—floral, lattice, geometric, cosmic—and several combined forms, including floral–geometric, floral–cosmic, floral–lattice, and geometric–lattice. These motifs are applied either as single designs or in paired combinations, enriching the visual character of the architecture. Among them, the floral–lattice combination emerges as the most prevalent, reflecting both aesthetic refinement and functional qualities such as ventilation and light filtration. The floral motif alone is the most widely used, appearing in nearly all carved elements, particularly in *kepala tingkap* and *kepala pintu luar*. The lattice motif ranks second in frequency, prominently featured on *lubang angin luar*, *lubang angin dalam*, *gerbang luar* dan *gerbang dalam*, *kepala tingkap*, *kepala pintu luar*, and *kepala pintu dalam*. These findings highlight the dominance of floral and lattice motifs in the decorative architectural components of the RLBP design, underscoring their cultural significance and enduring role in defining the house's architectural identity.

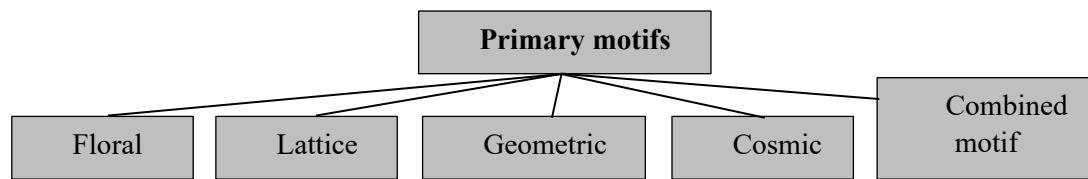


Figure 2 Primary motif of Rumah Limas Bumbung Perak (RLBP) (Source: Author)

Table 1 The detail tabulation of motif found in the decorative architectural components of RLBP (Source: Author)

House Component	Decorative Architectural Component	CS1	CS2	CS3	CS4	CS5	CS6
Roof	Tunjuk Langit (TL)	n/a	n/a	n/a	n/a	n/a	n/a
	Kepala Cicak Type i (KCi)	♣ ◇	♣	♣ ◇	n/a	☆ ◇	♣
	Kepala Cicak Type L (KCL)	♣	♣	♣	♣	☆	♣
	Papan Cantik (PC)	♣	♣	♣	♣	♣	♣
	Lubang Angin Luar (LAe)	n/a	n/a	#	n/a	#	n/a
Wall	Lubang Angin Dalam (LAi)	# ♣	# ♣	# ♣	# ♣	# ♣	# ♣
	Gerbang Luar (GBe)	#	#	#	#	#	#
	Gerbang Dalam (GBi)	n/a	n/a	#	#	n/a	♣
	Pagar Musang Serambi (PGa)	n/a	n/a	n/a	n/a	n/a	n/a
	Papan Manis (PM)	♣	♣	♣	♣	♣	♣
Window	Kepala Tingkap (KT)	♣ ◇	♣	♣	♣ ☆ #	◇ #	♣ #
	Pagar Musang Tingkap (PGb)	n/a	n/a	n/a	n/a	n/a	n/a
Door	Kepala Pintu Luar (KPe)	◇	♣	♣	♣ #	◇	♣ #
	Kepala Pintu Dalam (KPi)	n/a	n/a	n/a	#	◇	♣ #

Legend: ♣ Flora # Lattice ◇ Geometry ☆ Kosmos

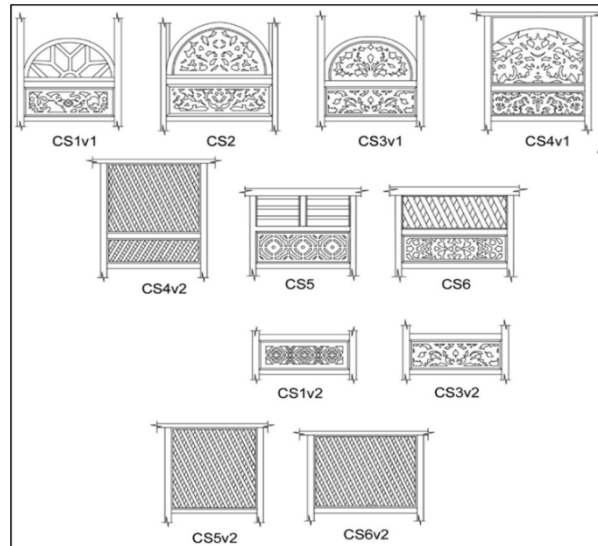


Figure 3 The variety of motif found in the Kepala Tingkap (KT) of the 6-sample house of RLBP
(Source: Author)

Table 2 The overall motif found in RLBP (Source: Author)

Decorative Architectural Component	Roof					Wall		Window			Door			
	Tunjuk Langit (TL)	Kepala Cicak Type i (KCi)		Kepala Cicak Type L (KCL)	Papan Cantik (PC)	Lubang Angin Luar (LAe)	Lubang Angin Dalam (LAI)	Gerbang Luar (GBe)	Gerbang Dalam (GBi)	Pagar Musang Serambi (PGa)	Papan Manis (PM)	Kepala Tingkap (KT)	Pagar Musang Tingkap (PGb)	Kepala Pintu Luar (KPe)
Type 1 / Motif	n/a	1. ☼ 2. ☼◇ 3. ☼☆	1. ☼ 2. ☆	☼	#	1. ☼# 2. ◇#	#	#	n/a	☼	1. ◇ 2. # 3. ☼# 4. ☼◇ 5. ☼☆	n/a	1. ☼ 2. ◇	1. # 2. ◇
Type 2 / Motif						☼#		☼	n/a		1. ☼ 2. # 3. ◇		1. # 2. ☼#	☼#

Legend: ☼ Flora # Lattice ◇ Geometry ☆ Kosmos

4.2 Nature as Inspiration

The analysis of motifs, patterns, and compositions in the decorative architectural components of the RLBP reveals the predominance of the floral motif. This motif most frequently appears in a full pattern with frame arrangement, often combined with the Awan Larat composition in carved wooden panels. In the Malay woodcarving art, the Awan Larat (meandering clouds) is a woodcarving composition type - a continuous, flowing design of intertwining floral and foliate forms—serves both decorative and symbolic purposes, reflecting the natural environment that surrounds traditional Malay settlements. The floral motif's prevalence can be closely linked to the cultural and environmental context of the Malay community. Traditionally, the Malays depended heavily on the forest for sustenance, medicine, and building materials (A. Noor & Khoo, 2003). The lush greenery and diverse flora of the tropical rainforest provided food sources and medicinal plants essential to daily life (Said, 2005). Apart from providing sustenance, nature has become an open inspiration to the Malay tukang

(craftsmen) where flora has become one of the major motifs used not just for its aesthetically pleasing appearance, but some is also chosen for its medicinal benefits and goodness.

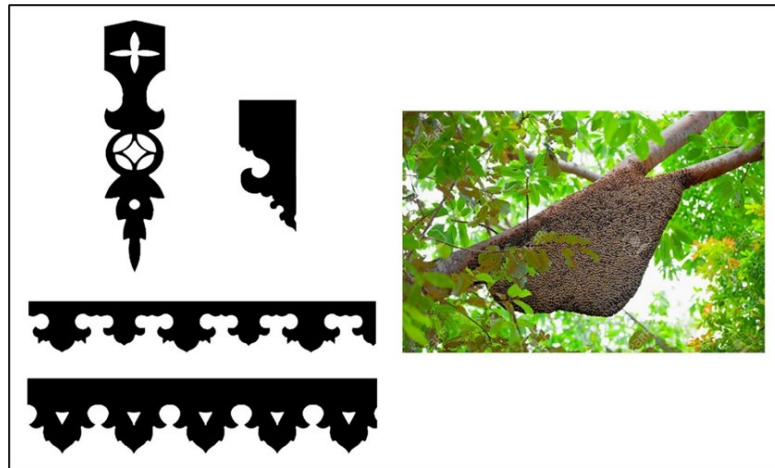


Figure 4 The form of *Lebah Bergantung* reflected in the hanging form of Kepala Cicak Type i (KCi), Kepala Cicak Type I (KCI), Papan Cantik (PC) and Papan Manis (PM) of RLBP. (Source: Author,2025)

4.3 The Role of Islamic Belief

In addition to this, the frequent usage of flora and the absence of figurative motifs in the decorative architectural components of RLBP indicates the Influence of Islamic belief on the arts and architecture of Malay. This prohibited the usage of the figurative motif in the arts and architecture. Besides this, the usage of Awan Larat composition in the full pattern with the frame of the carved panel found in the KT, KPe, KPi and LAi panel of RLBP can be relatable to a certain symbolic meaning, embedded with the philosophical Islamic belief underneath the composition. As explained by Daud et al., (2012) the term Awan Larat is derived from the concept of meandering clouds where the composition is composed of a gentle character of the plants' elements that are comprised of flowers, flower buds, tendrils, leaves, and shoots. The composition is regarded as the most glorified composition for that the carving carved using this composition is commonly placed at a higher level and hardly placed at a lower level, indicating the esteem of philosophical value embedded beneath the composition (A. Noor & Khoo, 2003 & Daud et al., 2012) The philosophical meaning behind the composition is attached to the natural growth characteristic associated with the movement of life. According to Wan Su Othman (1984) in Daud et al., (2012) the growing characteristic of the flowers and fruits in Awan Larat composition benefits the other creatures in their lives. This metaphorical interpretation is related to the message in encouraging the people to be obedient to Allah S.W.T by seeking and practising the knowledge that can benefit others.

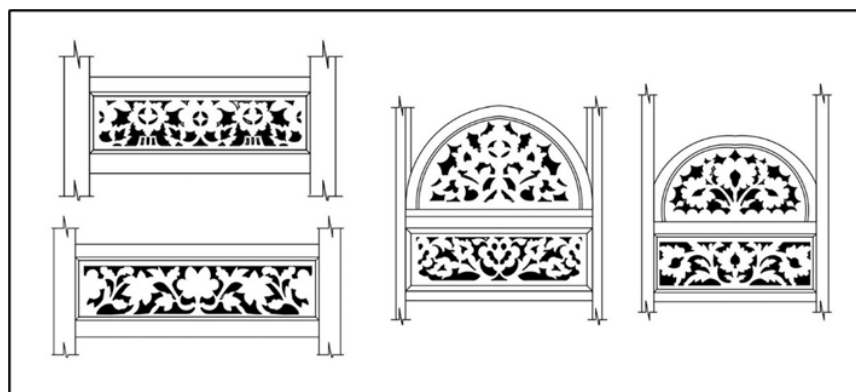


Figure 5 Flora motif in Awan Larat (meandering clouds) composition found in Kepala Tingkap (KT) of case study house no. 2 & no.3 (Source: Author,2025)

From this finding, it can be said that the Influence of Islamic belief on the decorative architectural components of RLBP exists in two ways; one is through the total elimination of the figurative motif usage. Second, through the assimilation of the figurative motif into an abstracted decorative architectural component's form design. This is demonstrated by the frequent use of the decorative architectural components' flora, geometry, cosmos, and lattice carving motif. In addition to this, the assimilation of figurative motifs becoming an abstracted form of design can also be identified. It is found that the principal Malay form of Kala has been used in the carving of Kepala Cicak type i – KCiCS1 in the case study house 1 (CS1) and Kepala Cicak type L – KCLCS6 in the case study house 6 (CS6). However, this form has been highly stylised into an abstract form which is almost difficult to notice at the first attempt. In the Malay woodcarving art that is based on the Malay-Islamic lexicon, Kala is regarded as one of the "punca" – Punca Kala (the source in the wood carving work) and associated to symbolise the time understood in the Islamic belief (Daud et al., 2012). In this context, the concept of time is understood as – the beginning, a start. There is an end for humans and creatures in this universe except for Allah S.W.T that is beyond time, endless, and forever Almighty. No figurative motif is found in any of the decorative architectural components of the RLBP house studied, which demonstrates the strong influence and respect towards the belief of Islam among the past craftsmen and house owners.



Figure 6 The abstracted motif of *Kala* that was found exist in the carving of the Kepala Cicak type i (KCi) in case study house no. 1 and Kepala Cicak type L (KCL) in the case study house no. 6. (Source: Author, 2025)

4.4 The Significance of Flora (Bunga) in Malay Culture

According to Abd Rashid, (2008) & Abdullah (2012), flowers has become one of the important elements in the traditional Malay community that has shaped the view and thinking pattern of the traditional Malay community. It has been widely used in culture, art, literature, and ritual practice. Flowers are favoured for their beauty and smell and the benefits that the flower could bring as medicine. In the Malay medication ritual practice, "mandi bunga" (flower bath) is one of the practices commonly used by the Malay people to get rid of bad luck and uplift the positive aura "seri" of the people (Rashid, 2007). In RLBP architecture, the floral motif in Awan Larat composition is frequently found in ventilation panels such as kepala tingkap (KT), kepala pintu (KPe), kepala pintu interior (KPi), and lubang angin interior (LAI). Beyond its aesthetic appeal, the floral carving symbolically "filters" the air passing through the openings, metaphorically infusing it with fragrance and positive energy. The choice of floral motifs thus extends beyond ornamentation, embodying a belief in the beneficial qualities of flowers and their capacity to bring harmony, vitality, and auspiciousness to the home. This deep connection between nature, symbolism, and craftsmanship underscores the enduring cultural significance of floral carvings in RLBP design.

5 CONCLUSIONS

The woodcarving motifs of the Rumah Limas Bumbung Perak (RLBP) embody a complex interplay of aesthetic refinement, cultural symbolism, and religious philosophy. This study confirms the predominance of floral and lattice motifs, often integrated into the Awan Larat composition, reflecting the Malay community's deep reverence for nature and its resources. The absence of figurative motifs and the abstraction of traditional forms such as Kala underscore the strong influence of Islamic principles, shaping both the visual language and the spiritual intent of the carvings. Beyond their decorative function, these motifs operate as cultural signifiers, conveying messages of auspiciousness, moral guidance, and social identity, while also enhancing environmental comfort through ventilation and light filtration. The findings highlight the importance of preserving both the tangible and intangible heritage embedded within these carvings. Systematic documentation, as undertaken in this research, not only safeguards an endangered artisanal tradition but also provides a critical reference for heritage conservation, adaptive reuse, and the sensitive integration of traditional Malay motifs into contemporary architectural practice. In doing so, this study contributes to sustaining the cultural legacy and architectural identity of Perak's vernacular heritage for future generations.

ACKNOWLEDGEMENT

The authors would like to express their sincere gratitude to the owners of the Rumah Limas Bumbung Perak case study houses for their generosity and cooperation in allowing this research to be conducted on their properties. Their willingness to open their homes for observation, documentation, and analysis has been invaluable in advancing the understanding of Perak's traditional Malay architectural heritage.

FUNDING

This research is self-funded.

AUTHOR CONTRIBUTIONS

All authors played equal contributions towards the production of this paper.

CONFLICT OF INTEREST

The author declares no potential conflict of interest with respect to the research, authorship, and/or publication of this article.

REFERENCES

- A. Noor, F., & Khoo, E. (2003). *The Spirit of Wood: The Art of Malay Woodcarving*. Periplus Editions.
- Abd Rashid, M. S. (2008). Evolusi bentuk dan makna pada ragam hias dalam seni bina tradisional Melayu. *Prosiding National Seminar Science, Technology, Social Sciences*.
- Abdul Halim Choo, I., Rashid, M. S. A., & Jamaludin, N. H. (2024). Malay Aesthetic Principles in the Roof Decorative Architectural Components of Rumah Limas Bumbung Perak. *International Journal of Art and Design (IJAD)*, 8(1).
- Abdullah, M. Y. (2012). *Warisan Senibina Melayu Terengganu*. Yayasan Diraja Sultan Mizan.
- Ahmad, J. A. (2025). SIGNIFICANCE OF WOODCARVINGS IN MANIFESTING CULTURAL IDENTITY OF TRADITIONAL MALAY ARCHITECTURE IN KUALA PILAH. *International Journal of Asia-Pacific Studies*, 21(1), 271–307. <https://doi.org/10.21315/ijaps2025.21.1.10>

- Ahmad, J. A., Ab Aziz, A., & Abd. Aziz, M. K. (2024). The Cultural Significance of Malay Woodcarving Motifs: A Case Study of Rumah Warisan Hajah Kundur. *International Journal of Art & Design (IJAD)*, 8(2), 105–118. <https://journal.uitm.edu.my/ojs/index.php/IJAD/index>
- Ahmad, J. A., Abd Aziz, A., & Abd. Aziz, M. K. (2022). A Study of Woodcarving Motifs on Traditional Malay Houses in Kuala Pilah, Negeri Sembilan. *International Journal of Art & Design (IJAD)*, 6(1). <https://myjms.mohe.gov.my/index.php/ijad/index>
- Gazali, F. W., & Abd Aziz, A. (2024). Woodcarving Motifs of Melaka Traditional House: Rumah Mohd Hassan Bin Ali. *International Journal of Art & Design (IJAD)*, 8(2), 228–241. <https://journal.uitm.edu.my/ojs/index.php/IJAD/index>
- Daud, N. I. M. K., Arbi, E., & Faisal, M. (2012). Pengaplikasian ukiran kayu melayu dalam seni bina di Malaysia The application of Malay wood carving on contemporary architecture in Malaysia. *Journal of Design and Built Environment*, 11.
- Mohd Anuar, N. S., Daud, M. Z., Iskandah, M. F., Lias, H., & Ma Hassan, N. N. H. (2023). Bangau Perahu: Malaysian Identity in Jewelry Design. *Ideology Journal*, 8(2). <https://doi.org/10.24191/idealogy.v8i2.454>
- Mohd Nawayai, S. S., Denan, Z., & Majid Abdul, N. H. (2020). READAPTATION OF MALAY VERNACULAR ARCHITECTURE FOR INDOOR THERMAL COMFORT IN MODERN MASJIDS TOWARDS A SUSTAINABLE DESIGN. *Journal of the Malaysian Institute of Planners*, 18(2).
- Rashid, S., Choo, I. A. H., Ramele, R. B., Baharuddin, M. N., & Alauddin, K. (2018). Decorative elements of traditional Malay houses: Case study of Rumah Limas Bumbung Perak (RLBP). *Journal of Social Sciences Research*, 2018(Special Issue 6). <https://doi.org/10.32861/jssr.spi6.105.115>
- Said, I. (2005). Criteria for Selecting Timber Species in Malay Woodcarving. *Journal of Asian Architecture and Building Engineering*, 4(1), 17–23. <https://doi.org/10.3130/jaabe.4.17>
- Said, I. (2012). Visual Composition of Malay Woodcarvings in Vernacular Houses of Peninsular Malaysia. *Jurnal Teknologi*. <https://doi.org/10.11113/jt.v37.527>
- Syala, N., Latip, A., Abdullah, A., & Ibrahim, M. (2020). THE DERIVATION OF URBAN DESIGN PRINCIPLES IN MALAY-ISLAMIC TOWN OF KUALA TERENGGANU. *Journal of the Malaysian Institute of Planners*, 18, 243–254.
- Utaberta, N., & Spalie, N. (2011). Evaluating the Design and Construction Flexibility of Traditional Malay House. *International Journal on Advanced Science Engineering and Information Technology*. <https://doi.org/10.18517/ijaseit.1.6.137>
- Yusof, H., Abd Wahab, I., Sabil, A., & Hanapi, N. A. (2022). WOODCARVING PANELS IN JOHOR TRADITIONAL MALAY HOUSES INFLUENCED BY THE ISLAMIC PRINCIPLE. *Journal of Islamic Architecture*, 7(2), 323–331. <https://doi.org/10.18860/jia.v7i2.17659>
- Yusof, H., Sabil, A., & Hanapi, A. (2023). Typology of Woodcarving Motifs in Johor Traditional Malay Houses. *International Journal of Sustainable Construction Engineering and Technology*, 14(2), 139–152. <https://doi.org/10.30880/ijscet.2023.14.02.015>
- Zainal Abidin, I., Ismail, S., Ismail, N., May Ling, S., & Mohd Hamdan, ur A. A. (2024). The Spatial Characteristics of Traditional Terengganu Architecture Towards Enhancement of Coastal Resort Tourism Identity in Terengganu. Case Study of Terrapuri Heritage Village. *Ideology Journal*, 9(2). <https://doi.org/10.24191/idealogy.v9i2.523>