PAPER • OPEN ACCESS

Understanding the Socio-cultural Sustainability of Kedah Royalty and the Influences on the Palace's Architecture

To cite this article: S A Muhammad and N M Rosdi 2022 IOP Conf. Ser.: Earth Environ. Sci. 1102 012069

View the article online for updates and enhancements.

You may also like

- Residential space transformation as the legitimacy space A case study: Magersari Ndalem Sasanamulya Baluwarti Sunanate Palace of Surakarta Avi Marlina
- Historical Buildings and the Issue of their Accessibility for the Disabled Dominika Kusnierz-Krupa
- Sustainability assessment of restored historic buildings: Case study of Baron Empain Palace in Heliopolis, Cairo, Egypt Representation analysis of the building and site

M Aboulnaga, P Puma and M Elsharkawy



doi:10.1088/1755-1315/1102/1/012069

Understanding the Socio-cultural Sustainability of Kedah Royalty and the Influences on the Palace's Architecture

S A Muhammad1* and N M Rosdi1

¹Department of Architecture, Faculty of Architecture and Ekistics, Universiti Malaysia Kelantan, 16300 Bachok, Kelantan, Malaysia

*E-mail: aisyah@umk.edu.my

Abstract. Socio-culture is a fundamental and common rule of a society that influences, controls, and directs the lives of individuals and societies. As the rulers with the most significant social status in a particular community, the Royals' socio-culture is more sophisticated than commoners and heavily affected by royal customs and traditions. The royals' socio-culture then affected the architecture of the palaces, notably the space arrangement, supporting the idea that socio-culture influences the constructed environment. This study aims to explicit the Kedah royalty's socio-culture characteristics and influences in terms of traditional palace design in general and space arrangement. Qualitative approaches employ an analytical assessment of literature, historical and documentary sources, measured drawings and photos, site observation, and personal interviews to fulfill the study aims. The availability of secondary material and the absence of references limit the scope of the inquiry. According to the findings, the Kedah royalty's socio-culture, including the activity system, privacy, family structure, the role and status of women, and social interaction, affected the characteristics of the residence palace architecture, notably the space arrangement. The case study demonstrates the Malay royal's socio-cultural sustainability and relationship to palace architecture. Socio-cultural sustainability is a social development resilience component that shapes society's future and the environmental aspects. The socio-cultural sustainability of the royal decree and ceremony is the essence of the hierarchical status between the royalty and the people that must be preserved as the civilization acknowledgment. The environmental aspects, such as the location of the dedicated palace influenced by the natural features like the mountain, river, and the sea, has definite practical meaning as the future references.

1. Introduction

In the Malay realm, a palace is called an Istana, created for the monarch or king of Malaya's numerous states. The sovereign is referred to as Raja or Sultan. Permaisuri is the name of the ruler's consort. Astana is a Sanskrit term "location," while Ostan is a Persian word that means "kingdom." The royal dwelling was known as Pura in ancient Malay. The Malay monarchs' palaces are like other palaces worldwide regarding their significance to Malay society, reflecting the rulers' authority and position [1]. Malay kings wielded monarch authority and controlled Malaya from the 18th to the early 20th centuries. The socio-culture of the Malay monarchs affected the construction of the Malay palace [2]. The Malay royal family values adat as an essential aspect of their culture. Adat is a system of norms governing proper linguistic, cultural, and social behavior in a highly hierarchical society [3]. Adat has been preserved by Malay monarchs and royal families to the current day since it is the indigenous importance of traditional Malay socio-culture [4]. The Malay royalty' socio-culture is comparable to regular Malays, although it is richer in tradition and adat. The ruler has complete control over a state, and members of the royal family aid him. The Sultan and the royal family were the first to meet foreign dignitaries and be exposed to outside influences.

Exposure to Western and other cultures led to changes in the royalty' socio-culture and, finally, the palace's design. The commoners acclimated to the changes, particularly those with better rank

Content from this work may be used under the terms of the Creative Commons Attribution 3.0 licence. Any further distribution of this work must maintain attribution to the author(s) and the title of the work, journal citation and DOI.

IOP Conf. Series: Earth and Environmental Science

1102 (2022) 012069

doi:10.1088/1755-1315/1102/1/012069

and position. The commoners finally followed the Sultan's introduction and adoption of Islam. The architecture of Malay palaces was influenced by indigenous Malay socio-cultural factors known as adat or decree [2][4][5], which is consistent with other authors' suggestions about the interrelationship between socio-culture and the built environment in general [6][7]. At the same time, socio-culture changes and influences the built environment as the built environment evolve in tandem with socio-cultural developments [8]. According to Mohd Taib, cultural changes are not static but always moving forward, with irrelevant portions of culture being left behind while significant aspects are kept and interact with new elements [11]. The interrelationship between socio-cultural and built environments is dynamic, with changes affecting the other in one component. The old Malay socio-culture is considered to have inspired the Malay palace building. Changes in royal Malay socio-culture because of interaction with foreign cultures will likely impact palace design, particularly those utilized as dwelling palaces. Examining the literature reveals the interdependence between people's socio-culture and the built environment. Rapoport identified socio-culture as a fundamental influence in building formation [8]. There are several kinds of research on this topic in the West. However, there is minimal mention of this issue regarding Malay socio-culture and the built environment. The palace's architecture is significant because it depicts the people's socio-cultural and civilization. The palace is also a major centre of study and culture [1], many historic palaces were destroyed or abandoned, partly due to a lack of financing for restoration and upkeep, as well as a lack of utility in the current context. Based on the preceding considerations, there is a need to investigate the link between Malay royal socio-culture and Malaysian palaces. Given the scarcity of accessible evidence, studying Kedah royal socioculture and palaces might be deemed experimental. Based on this consideration, the aim of this study is to explicit the socio-cultural influences on the Kedah royalty on the impacts on traditional palace design.

2. Relationship between Built Environment and Socio-culture

The constructed environment is anything that has been created, arranged, or maintained by humans to fulfill human purposes (needs, wants, and values); to mediate the environment with results that alter the environmental context [9]. History has shown that the built environment has existed as a subject since time. The built environment directly impacts human psychological requirements and social behavior. According to Batuska [10], the built environment consists of seven components: goods, interiors, buildings, landscapes, cities, regions, and earth. The built environment may embody people's socio-culture, as expressed in many traditional houses, palaces, religious structures, towns, and other building typologies worldwide. It is the setting in which people live their lives. It offers physical support, accommodates human life, and aids in preserving their socio-culture. Specific human demands and activities necessitate specific physical environments.

Each environment has requirements and supports the activities established or created in it. According to Maslow, human wants materialize and manipulate the constructed environment to obtain lifestyle fulfillment [12] and comfort capabilities [11]. It begins with self-gratification and progresses to social protection and subsistence. Social contact is a study of social purpose and equality and human engagement in applying attitudes and manifesting them in the environment. Thus, social is one of the components that contribute to the formation of the environment for human functions and purposes [7], as it provides guidelines and signals for humans to manage and construct the environment. The physical environment, particularly architecture, may differ within society owing to social position as perceived by cultural standards. For example, in many countries, residential structures vary depending on the status of the house owner, as seen in ordinary people's homes vs. the mansions and palaces of the powerful and wealthy, such as aristocrats and royals. The physical environment limits the viable actions. From this perspective, the socio-cultural and architectural environments are inextricably linked since one influence the other [6] supports this idea by claiming that the environment is both a determinant and an extension of behavior. Regardless of disagreements, existing research has demonstrated the relationship and connection

doi:10.1088/1755-1315/1102/1/012069

between socio-culture and environment. The relationship between environment and socio-culture is a dynamic and ongoing process of interacting and interconnected components [7]. The environmental and behavioral process is reciprocal or circular feedback rather than a direct causal sequence. Whatever component is isolated for research and study, it is evident that that component is both a cause and an effect.

Any part that acts on other features is inevitably working on itself. The organization of behavior concerning physical surroundings is dynamic. Socio-culture is the most influential component in people's architecture; it impacts the structure's shape since the functions are much more closely related to the social lifestyle of the inhabitants [4]. The look of a system, such as the settlement, manifests the residents' and society's socio-culture. The vernacular architecture closely resembles socio-cultural aspects since it faithfully implements and adapts societal customs and beliefs. The architecture in general, and the space organization, can describe the tenants' lifestyle and activity system. Understanding people's traditions, beliefs, and socio-culture explains why houses and structures' space arrangement and architectural components vary among countries even with the same materials and technology [4][9]. Building space organization differs significantly according to the spatial requirements of different cultures. The everyday activity routines, including particular and infrequent rites and rituals, affected the palaces occupied by the ruler and his family. Other palaces were just for administrative purposes, while others were only for a brief period or function. In addition, some aspects of the socio-culture of the royal family have been influenced by foreign culture of the consort [13]. There are many functions of the palaces and spaces were translated into spaces such as the audience hall (Balairung), elevated platform or dais (Singgahsana or Takhta), and eating area (Balai Santapan), and other places based on their distinct roles. Traditional Malay palaces are architecturally like traditional Malay dwellings in general shape. Still, they differ regarding construction features and adornment owing to distinctions in customs and ultimate power between the royals and commoners.

3. Methodology

According to the literature research, the qualitative technique is the best fit for the study's aims, limited references, and availability of secondary data. The qualitative technique was also chosen for this study since it is exploratory and would allow for a more in-depth understanding of the interrelationship between socio-culture and the built environment. A case study was chosen to meet the research's objectives using a variety of inquiries, including an analytical evaluation of historical records and measurement drawings, site observation, and personal interviews. According to Tipple and Willis, the qualitative technique allows for fluid interaction between people and the physical environment [8]. It interprets the built environment as a sign of the residents' cultural values and social order. The following queries are used in the study to reach its aims utilizing the case study method:

- i. A critical examination of both old palaces' literature, historical, and documentary sources from the state library and archive.
- ii. An analytical review of measured drawings and photographs of palaces referring to the Heritage Study 2006 and Heritage Study 2008, International Islamic University Malaysia [15][16].
- iii. Site observation to capture the physical views of the old palaces and the investigate the circulation.
- iv. In-person interview with Tengku Zainol Rashid, the Chairman of Persatuan Kerabat Diraja Kedah.

The state of Kedah was chosen as the research location due to the importance of the Kedah royalty's socio-culture and the architecture of Kedah palaces. The Kedah civilization, brought by the Sultanate of Kedah, is unrelated to the Malacca Sultanate. It is not related to the Malacca Sultanate, which originated in the Srivijaya Kingdom of Indonesia. Like other Malay Sultanates,

doi:10.1088/1755-1315/1102/1/012069

the Kedah Sultanate had its regalia and socio-culture. The choice of Kedah was also influenced by the availability of secondary data from measured drawings of palaces.

4. Findings

On June 4, 1864, Sultan Abdul Hamid Halim Syah Ibni Sultan Ahmad Tajuddin Mukarram Syah was born. He was crowned on January 21, 1882, at nineteen. Sultan Abdul Hamid Halim Syah's reign was prosperous, as evidenced by the construction of new palaces and the repair of existing palaces. Sultan Abdul Hamid Halim Syah's brides had their palaces or residences. The Sultan had seven wives. Che Sepahchendera, Cik Larasih, Sharifah Mariam, Cik Manja Lara, Cik Safiah, Sharifah Seha, and Sharifah Fatimah were among them (Personal interview with Tengku Zainol Rashid, 2009). A palace can be a large complex of buildings within a castle. Several buildings within the castle include separate palaces for the royal family's residence and the administrative palace. The fortress may be identified by the walls that encircle the entire royal complex or the water channel surrounding it [2]. A castle did not cover some palaces. Some palaces were built on a hill for safety and security, while others were built near a body of water, such as a river. This is because the water was a primary mode of transportation in ancient times [2]. Findings from the case studies have shown that the socio-culture of the Kedah royalty influenced the architecture of the palaces consistent with opinions which suggest the inter-relationship between socio-culture and the built environment [7][6][13] proven that the socio-culture of the Kedah royalty was influenced by the royal custom and traditions.

4.1 Istana Pelamin

The palace was built in 1735 under Sultan Muhammad Jiwa Adilin Syah (1710-1778), when the seat of Kedah was relocated from Kota Bukit Pinang to Alor Setar. Three Sultans lived there: Sultan Muhammad Jiwa Adilin Syah (1710-1778), Sultan Ahmad Tajuddin Mukarram Syah (1854-1879), and Sultan Abdul Hamid Halim Syah (1882-1943). Since the royal wedding of Sultan Abdul Hamid Halim Syah's princes and princesses in 1904, the palace has been known as Istana Pelamin. The royal wedding took three months to complete. In Malay, *pelamin* refers to a wedding platform or dais. It is specifically designed for the bride and groom to sit during their wedding ceremony. The main residential building, Istana Pelamin or Istana Mak Wan Besar, the administration building, Balai Besar, and another residence building, Rumah Pagoda, were all included in the wall surrounding it. The Rumah Pagoda, on the other hand, no longer exists. Findings also show that certain palace employees' quarters are placed within the palace's inner wall. The quarters are no longer live, and no detailed information about their locations is available. Before the royal weddings, the main palace was known as Istana Mak Wan Besar. In social, Malays chosed to expand the core part due to the addition of the family members or hierarchy in the society [14]. Figure 1 shows Mak Wan Besar with her grandchildren beside Rumah Pagoda and Figure 2 shows the entrance of Istana Pelamin.

Table 1. Building chronology of Istana Kota Setar (Istana Pelamin)

Year	Event
1726	Sultan Muhammad Jiwa Adilin Syah oversaw the construction of the Kota Setar palace.
1735	The palace was completed. Sultan Muhammad Jiwa's official house
1771	The Bugis burned the palace during their invasion. The reconstruction of the palace according to its original architecture.
1821	The Siamese assaulted Kedah, and the Kota Setar palace was severely devastated. The palace was restored following its original design.
1856	Sultan Ahmad Tajudin Mukarram Shah renovated the palace. Brick and cement were used instead of wood.

doi:10.1088/1755-1315/1102/1/012069

	The first structure in Kedah to incorporate new materials brought by Western
	influence.
	Wan Hajar occupies this position.
1900	During Sultan Abdul Hamid Halim Syah's reign, a new wing was built for the royal
	wedding.
1904	The Sultan's five children's grand royal wedding.
	Istana Pelamin is another name for Istana Kota Setar.
1909	Wan Hajar has died.
1912	Che Manjalara is in charge.
1983	The Royal Museum of Kedah has taken place.

Source: Heritage Study [15] and personal interview



Figure 1. Photo of Mak Wan Besar with her grandchildren beside Rumah Pagoda Source: Tunku Ismail Jewa (2008) [17].



Figure 2. Photo of Istana Pelamin Source : Researcher

4.2 Istana Sepahchendera

The palace was named after Sultan Abdul Hamid Halim Syah's first consort, Istana Sepachendera. The palace was built in 1882, following the enthronement of Sultan Abdul Hamid Halim Syah as King of Kedah. This palace's architecture is like that of a Siamese home. It is a three-story brick mansion with a roof deck, identical to numerous buildings in Siam. The mansion building in Siam during the period was influenced by Western design. Besides, because of its position on Jalan Kampung Baru in Alor Setar, the Istana Sepahchendera is also known as Istana Kampung Baru. In this palace, Che Sepahchendera gave birth to two princes and two princesses, the oldest prince Tunku Ibrahim, Tunku Rokiah, Tunku Fatimah, and Tunku Kassim. Figure 3 shows the present condition of Istana Sepahchendera.

doi:10.1088/1755-1315/1102/1/012069

Year	Event
1882	The Istana Che Sepahchendera has been constructed.
1884	Tengku Ibrahim, the oldest prince, is born.
1907	Che Sepahchendera died on February 10, 1907.
1922	Kampung Baharu Girls' School, the first English school, was established in the palace.
1941	The Japanese army invaded Malaya.
1945	Japan Language Centre and Fire Fighter Office were established.
1946	Until 1954, it was known as Sekolah Sultanah Asma.
1966	Sekolah Rendah Sultan Abdul Halim became an all-boys elementary school.
1983	The palace was converted into the Kedah Education Department.
2000	Insaniyah University College used it as a prayer hall.

Table 2. Chronology of the Istana Sepahchendera



Figure 3. Current image of Istana Sepehchendera Source: Researcher

5. Discussion

Two palaces were chosen for the case studies because they were established as residence palaces for Sultan Abdul Hamid Halim Syah and his family. The Sultan, his mother, and one of his wives lived at Istana Pelamin, the official residence of the Kedah royal family. Istana Sepahchendera was explicitly created for Che Sepahchendera, the Sultan's first consort. The two palaces have distinct architectural features where the Istana Pelamin had traditional Malay, Siamese, and Western architecture, while the Istana Sepahchendera had Siamese house architecture.

The following topics examine the impact of the Kedah royal family's socio-cultural influences on architecture in general and the spatial organization of the Kedah palaces in particular. The examination focuses on the following socio-cultural factors: I activity systems, ii) privacy, iii) family structure, iv) the role and position of women, and v) social contact.

5.1 Activity Systems

The activity system is separated into everyday activity and occasional activity. However, information about the Sultan and royal family's daily activities routine is sparse. The assumption is based on a survey of the literature on Malay socio-culture and Malay royal socio-culture in general, both of which were impacted by the royal edict.

IOP Conf. Series: Earth and Environmental Science

1102 (2022) 012069

doi:10.1088/1755-1315/1102/1/012069

5.1.1 Daily routine. According to the literature evaluation, the Sultan has sovereign sovereignty over his subjects and is assigned the greatest social rank. His rank and position guarantee that his subjects attend to his and his family's demands. The most significant difference between a commoner and the royal family in terms of everyday activity is that the royal family does not do any chores because all of their necessities were provided and taken care of by servants, maids, guards, and others who were always at their service. Daily duties such as food preparation and housekeeping are not part of the royals' daily routine.

5.1.2 Occasional activity. Circumcision, marriage, wedding, and other royal family activities occur occasionally. These events were lavishly staged following royal customs and ordinances, as discussed in Chapter 3. Depending on the significance and magnitude of the occasion, the occasional activities may include royal visitors and others. The royal visitors were seated in the hall, dressed accordingly in formal clothing. Ordinary people were present at large ceremonies such as the royal wedding of the sultan princes and princesses. In this situation, a unique tent was constructed for the guests.

5.2 Privacy

There are two types of privacy: privacy from the public realm and privacy within the house. According to a literature review, privacy was not prioritized in Malay society. However, the privacy of the Sultan and his family is highly valued and protected. For example, unlike commoners, the Sultan bathes in his chamber, eats alone, and has his room in each castle to preserve his privacy. His family members were also given privacy, with some areas of the palaces restricted to outsiders. Even though there is no precise information on the royal family's privacy, given their prominence, privacy has become highly crucial since past research has proven that privacy is influenced by social standing. The significance of privacy to the royal family is consistent with the royal family's hierarchy, with the Sultan having the most privacy, followed by his consort and children. Privacy was guaranteed via the provision of areas and by the presence of guards who always ensured the Sultan and his family's privacy. Separate apartments for the Sultan and his consorts at the Kedah palaces are consistent with palaces in other countries, reflecting the Sultan's demand for seclusion.

5.3 Family Organization

According to an examination of the literature, Sultan Abdul Hamid Halim Syah has many spouses or consorts. The consort's heritage impacted her standing and that of her offspring. Only a prince of a consort of royal blood, for example, can be crowned as a sultan. A son of a non-blood royal consort could never become Sultan. The Kedah royal family's arrangement affected the palaces' building; unlike in certain civilizations, the consorts did not dwell together in one palace. The Sultan's consorts resided separately in separate palaces with their offspring. The Sultan does not live in a single palace but instead visits the palaces of his consorts.

A review of the literature reveals that the Sultan had several wives. As a result, he would not stay with just one woman but spend his time between numerous palaces, as each wife has her castle. In this regard, he was more of 'visitors' in his consorts' palaces. However, according to personal interviews, he spent most of his time in the main palace, Istana Pelamin, near the Balai Besar, the administrative palace. It is safe to presume that Sultan Abdul Hamid Halim Syah divides his time between his various responsibilities and the requirement to administer a state. According to a review of the Istana Pelamin, the Sultan has his own apartment in the palace and a separate room for his consort. Likewise, the Sultan has his own space on the third floor of the Istana Sepahchendera, where the whole space was designated for him and his consort (Heritage Study, 2008). No one was allowed to enter this area.

doi:10.1088/1755-1315/1102/1/012069

5.4 Role of Women and Position

Wan Hajar Wan Ismail, Sultan Abdul Hamid Halim Syah's mother, was well revered and influential throughout his reign. The Sultan ascended to the throne in 1882 and married his first consort in 1883. The Sultan's mother had such a high rank that she remained to dwell in the royal palace after his enthronement in 1882 and marriage in 1883 until she died in 1909. Che Manjalara, the Sultan's first consort, only moved to the palace after Wan Hajar died. The Sultan married five more women, but each had her palace and did not dwell in the main palace.

Similarly, Che Manjalara, descended from Siamese aristocracy and raised by the Sultan's sister, was the second most important person in the royal hierarchy after the Sultan. The consorts of the Sultan were not involved in governmental administration. The role of women in the palaces, such as maids and servants, who were classified based on their background and tasks, also impacted the allocation of space in the palaces.

5.5 Interaction with Others

As the ruler and the ruled, the Sultan, royal family, and commoners share a social interaction. The relationship entails communication and participation on both sides in the administration of the state. Sultan Abdul Hamid Halim Syah, the sovereign, formally met his administrators and commoners in Balai Besar. Balai Besar also serves as an official location for the royalty to commemorate royal occasions that are open to the public, such as the lavish royal wedding. The palace serves as a private conference space. Only invited visitors are permitted to enter and be entertained by the royal family.

6. Conclusion

The Kedah royalty's socio-culture inspired the architectural and spatial organization of the palaces, notably Istana Pelamin and Istana Sepahchendera. The Kedah royalty's socio-culture, as defined by Malay customs and traditions, affected the design and space organization of the palaces, including the activity system, privacy, family structure, and role and practice of women. The Istana Pelamin's space organization is congruent with traditional Malay architecture in terms of linear organization, open layout, and domain partition. It was initially designed for the Sultan and his mother. The organization of the Istana Sepahchendera, while comparable in some ways, such as the open design and various entrances, is distinct since it is three-story high and, more significantly, congruent with the socio-culture of the consort, who was of different cultural provenance. Thus, further research is recommended to study more on the architecture and discover the history behind these palaces. Findings from this study would benefit the younger generations for sustainable development apart from sustaining its heritage value.

References

- [1] Abdul Halim Nasir & Wan Hashim Wan Teh. (1997). Warisan Senibina Melayu. Bangi: Penerbit UKM.
- [2] Abdul Halim Nasir. (1993). *Kota-kota Melayu*. Kuala Lumpur: Dewan Bahasa dan Pustaka.
- [3] Hafriza Burhanudeen. (2006). Language and Social Behaviour: Voices from the Mala World. Bangi: Penerbit UKM.
- [4] Syed Alwi Sheikh Al-Hadi. (1980). *Adat Resam Dan Adat Istiadat Melayu*. Kuala Lumpur: Dewan Bahasa dan Pustaka.
- [5] Gibbs, P. (1987). Building A Malay House. Singapore: Oxford University Press.

doi:10.1088/1755-1315/1102/1/012069

- [6] Altman, I., & Wohlwill, J. F. (1977). Human Behaviour and Environment: Advance in Theory and Research, in Stokols, D., & Altman, I. (1991). *Handbook of Environmental Psychology*. Finland: Krieger Publishing Company.
- [7] Rapoport, A. (1969). *House Form and Culture*. New Jersey: Prentice-Hall.
- [8] Tipple, A. G., & Willis, K. G. (1991). Housing the Poor in the Developing World: Methods of Analysis, Case Studies, and Policy. Great Britain: Routledge.
- [9] McClure W., & Bartuska, T. (2007), *The Built Environment: A Collaborative Inquiry into Design and Planning.* Hoboken: J. Wiley & Sons.
- [10] Batuska, T. S., & Young, G. L. (1994). *The Built Environment: Creative Inquiry Into Design and Planning*. CA: Crisp Publications.
- [11] Mohd Taib Osman. (1989). *Masyarakat Melayu: Struktur Organisasi dan Manifestasi*. Kuala Lumpur: Dewan Bahasa dan Pustaka.
- [12] Maslow, A. (1971). The Farther Reaches of Human Nature. USA: Viking.
- [13] Muhammad, S. A. (2011). *The Relationship Between The Socio-Culture Of Royalty And The Architecture Of Istana Sepahchendera*. Warisan Nusantara dan Bicara Kraf Warisan 2011. Sabah: Universiti Malaysia Sabah.
- [14] Muhammad S. A., (2020) Potential Application of the Modular System in Traditional Malay House in Modern Construction Industry, Journal of Critical reviews, 7(5), 28-32.
- [15] Heritage Study (2006), *Istana Pelamin*, Measured Drawing, International Islamic University Malaysia, Unpublished report.
- [16] Heritage Study (2008), *Istana Sepahchendera*, Measured Drawing, International Islamic. University Malaysia, Unpublished report.
- [17] Tunku Ismail Jewa. (2008). Selected Articles on Historical Events, Places, and People Associated with Kedah. Kedah: Persatuan Kerabat Diraja Kedah.