PERANAKAN ART AND PALM PAPER: IMPLICATIONS ON DECORATIVE ITEMS DESIGN

By

Miss Yeoh PUI SEE

A Thesis Submitted in Partial Fulfillment of the Requirements

for Doctor of Philosophy DESIGN ARTS (INTERNATIONAL PROGRAM)

Graduate School, Silpakorn University

Academic Year 2020

มหาวิทยาลัยศิลปากร

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MissYeoh Pui see

วิทยานิพนธ์นี้เป็นส่วนหนึ่งของการศึกษาตามหลักสูตรปรัชญาดุษฎีบัณฑิต
สาขาวิชาศิลปะการออกแบบ แบบ 1.1 ปรัชญาดุษฎีบัณฑิต(หลักสูตรนานาชาติ)
บัณฑิตวิทยาลัย มหาวิทยาลัยศิลปากร
ปีการศึกษา 2563

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Keyword : Peranakan, Art, Palm Paper

MISS YEOH PUI SEE : PERANAKAN ART AND PALM PAPER: IMPLICATIONS ON DECORATIVE ITEMS DESIGN THESIS ADVISOR : ASSISTANT PROFESSOR JIRAWAT VONGPHANTUSET, Ph.D.

The Peranakan is known as one of the most important but disappearing culture of Southeast Asia. The term of Peranakan derived from Malay language to describe descendants of Chinese father from China and local mother who have called the Straits Settlements their homes at the period of British colonial in Malaya. The Peranakan communities developed a unique culture determined by traditional Chinese religious practices. The Baba had established international trades with China and Europe countries which has contributed greatly to the economy. Working along with the British, they have expanded into local commercial plantations. The lucrative earnings were used in maintaining their lavish lifestyles and adoration of imported collections of decorative items. The Nyonya well respected for their crafts especially needle works with auspicious connotations of art elements which uniquely reflected the Qing dynasty, Malay and European styles. This research is aimed to preserve the Peranakan art with combination of palm paper. The research method applied was mixed methods of quantitative, qualitative and process experiment. The quantitative research method was employed to determine the acceptance and perception of consumers with total of 399 samples from 10 locations across The Klang Valley. This followed by qualitative research methods of interviews were conducted on 6 designers and 6 experts to provide further support. With positive results, the final method of process experiment in design development was used to examine material suitability through crafting techniques. The researcher then employed the techniques into the development of decorative items using motifs and colours borrowed from the Peranakan arts. The crafted decorative items are the researcher's personal recollections of her Peranakan roots.

ACKNOWLEDGEMENTS

First and foremost, I would like to express my heart-felt gratitude to both my supervisors Assistant Professor Dr. Jirawat Vongphantuset and Assistant Professor Dr. Veerawat Sirivesmas for their guidance, advice and encouragement during my study. To the Chairman of the program Professor Eakachat Joneurairatana, I would like to thank him for his advice and assistance throughout my study.

Last but not least, I would like to thank my parents for their faith and encouragement; my husband and daughter for their endless support and understanding.

Yeoh PUI SEE

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1.1 Introduction

Malaysia is a well-known country of culture integration of indigenous people, Malay, Chinese and Indian dated more than 500 years ago making it a unique kaleidoscope of multi ethnic, multi culture and multi lingual. Due to its interwoven diversity, the country has kindred and cultivated their own exclusive hybrid culture known as Peranakan. The appellation of Peranakan means local descendants of mixed domestic and foreign ancestry in Malay language. There are many communities of Peranakan such as Peranakan Chinese, Peranakan Indian, Peranakan Arab and Peranakan Dutch (Khoo, 1998). However, the term of Peranakan mainly refers to Peranakan Chinese as it is the most important and largest community. Other terms of Peranakan are Baba Nyonya, Peranakan Chinese and Straits Chinese refer to the people of the same community (Mahmood, 2004). The Peranakan is a sub-ethnic community (Mahmood, 2004) whom accepted cultures of the Malay, adopted approaches from the European and embraced the British way of life but diligently inhabited Chinese religion believes and rites (Khoo, 1998). They are the descendants of trade settlers mainly from Fujian, China belonging to the elite group granted by wealthy background and were addressed as Baba and Nyonya; man known as Baba and woman as Nyonya (Low, 2014). They are recognised as the earliest Chinese descent in the Malay Peninsula and also as the Straits Chinese due to strong affiliation with the British controlled Straits Settlements of Malacca, Penang and Singapore (Mahmood, 2004).

Early generations of Peranakan were learned in classical Chinese until the early 20th century, due to close ties and great influence of the British, English education was accepted and thus received many foreign opportunities that had immensely benefitted advancement of the Peranakan community (Lee & Chen, 2012). The Peranakan lived a refined and affluence lifestyle in which they owed wholly to international trades (Cheah, 2010) in which they contributed remarkably by advocating the economy in trades with China and the Europeans. By 1942, when Malacca in the change of hands of colonialism of Dutch to British, the Peranakan community was well formed and their culture was prominent (Mahmood, 2004). The fortune of the Peranakan mainly achieved from port, agriculture and tin trades (Lee & Chen, 2012). Around the 18th and

19th century, many diverted into profitable agriculture such as pepper, gambier and rubber (Khoo, 1998) which later replaced by oil palm as deemed more lucrative (Shevade, 2019). Upon developing the ports of Penang and Singapore, lands were sold to the settlers to encourage agriculture cultivation activities (Khoo, 1998). Nonetheless, with developing port trade opportunities at the same time, many Peranakan communities expanded to Singapore, Penang, Thailand and Indonesia (National Museum Singapore, 1989).

The journey of Peranakan began with the Chinese trade that by large, Hokkien from the Fujian province of China with minority from Cantonese and Teochew ancestry as early as the 5th century in which China has shown historical evidence on international trade with countries of the Southeast Asia in which was then known as Nanyang (Wee, 2015). Being part of countries, the international trade in the Malay Peninsula flourished due to the maritime transportations, strategically available ports and of course the direction of wind during monsoon specifically at the entrepot of Straits of Malacca (Khoo, 1998). Due to limited resources, the economy of Malacca needed to depend strongly on international trade as it is situated intermediately between China, India and Indonesia (Widodo, 2008). The Chinese international trade with the Malay Peninsula during AD 617 to 907 of the Tang Dynasty has inevitably providing thus invited the earliest wave migration of Han Chinese in abundance from the regions of southern China. During the Ming Dynasty from 1368 to 1644, Emperor Yong Le decided Malacca as the main commercial port in expansion of international trade and through commander Cheng Ho, more than 500 Chinese were sent there. The final wave of Chinese migration was between 1644 to 1911, during the China takeover by Manchu of the Qing Dynasty. At the time that extra marital was accepted, many of the traders made 2nd wives out of domestic women to manage their trades and these marriages led to the birth of Peranakan (Purcell, 1967). The Chinese who settled built small-scale trading community together with the locals as their perpetual base (Lewis, 2005) which deemed important with the subsequent growth of the Chinese population specifically during the era British colonization (Khoo, 1998).

As a flourishing international commercial port, Malacca also attracted many European influences from Portugal, Netherland and Britain (Lee, 2016). In the 18th century, the British East India Company had monopolised many businesses as they were financially well secured and received support from their government; better than their Europeans allies. The development of

ports continued in 1786, Francis Light of the British East India Company was given the island of Penang by the Kedah Sultan (Khoo, 1998) and established the unrestricted trade law on produces in which to compete with Malacca (Library of Congress, 2006). The Penang port attracted many minor traders from China in which by the turn of 19th century, abundance of Fujian Chinese traders settled in Penang (Khoo, 1998). The final port in the Malay Peninsula was founded in 1819 by Sir Thomas Stamford Raffles from the British East India Company; granted by the Sultan of Johor (Library of Congress, 2006). The same trade law applied to the port of Singapore in which drew in Chinese traders from China as well as Malacca settlers (Khoo, 1998).

The heritage of the Peranakan was a Southeast Asia cultivated cultural identity which took journeys of thousand miles and millenniums, became the quintessential ingrained in Malacca, Penang and Singapore of the Straits Settlements during the most extravagant historical period of the Malay Peninsula as well Malaysia. They lived in an opulence of wealth, status and pride but did not live long enough with the many economy and politic turmoil. Although the Peranakan may have blended into the mainstream Chinese but the tradition remains with their descendants. In reality, not much has changed as I observed of my paternal grandparents in which they lived lives with great esteem of their personalities and belongings. Doing so is not peculiar as the roots of Chinese were preserved in the ancestry of the Peranakan specifically on the religions and customs. Reminiscing the days of growing up with my Malaccan grandmother has provided not abundance of fortune but the priceless knowledge of my responsibilities and position in the family. Nothing comes without the painstaking rituals of cleaning the altar, needle works and cooking. Not forgetting the many weekends my grandfather brought me and cousins to our family owned oil palm plantations at Seberang Perai in Penang which was known as Province Wellesley. Being just retired from the barrack duty, he spent most of his time there walking around with cigar and mingling with his British, Malay and Eurasian friends. All these never occurred much during my younger days, similarly for many modern generations of the Peranakan in which some may not even know, some still searching but I believe many who knew would want the legacy to live on. With the limited acquirements from my grandparents, this opportunity allows me to view the Peranakan in broad perspective and to understand the detail embedded in the significance of the arts and crafts articulately owned by the Nyonya. Never the least, I will use the acquired knowledge from this research to craft decorative items with modern twist and original meaningful

connotations as tribute to the Peranakan culture. By doing so, it is more than enriching of cultural knowledge in the social context, this by large can revive the arts and crafts tradition in contemporary artisans who are masters in their own craft as the reflection of individuality and creativity in arts and crafts.

1.2 Research Problems

1. The need in Malaysia Peranakan preservation; the roots of a multiracial nation as deemed important for the tourist industry (The Malay Mail, 2017).

2. With the reclining Peranakan culture, the community hopes to preserve its identity (Coluzzi, Riget & Kitade, 2018).

3. The promising biodegradable, natural and safe material of the palm tree is not fully explored (Sumardi, Hadiyane, Rumidatul & Melani, 2020).

1.3 Research Aim

To use palm paper to produce decorative items with the influence of the Peranakan art.

1.4 Research Objectives

1. To determine the concept application of palm paper on decorative items.

2. To compare the quality of hand crafting and machine crafting applied on the palm paper.

3. To explore artist narrative on decorative items through the heritage of Peranakan and palm paper.

1.5 Research Questions

1. Does the concept of palm paper applicable on other decorative items?

2. What are the comparison qualities between hand and machine crafting on the palm paper used for the Peranakan decorative items?

3. What are the relations between the artist, Peranakan heritage and palm paper?

1.6 Hypothesis

1. The concept of palm paper is applicable on other commercial products.

2. There are differences in comparison qualities between hand and machine crafting on the palm paper used for the Peranakan decorative items.

3. There are relations between the artist, Peranakan heritage and palm paper.

1.7 Research Methodologies

1. Quantitative approach is to investigate the perception of public consumers as primary data collection using sampling method through survey questionnaire.

2. Qualitative approach is to investigate further on the opinions of experts, provide support and strengthen the findings of quantitative data using interview targets through semi structured questions.

3. Process experiment on palm paper to generate the design models of Peranakan decorative items.

1.8 Keywords Definition

1. Peranakan in this context refers to Peranakan Chinese; the descendants of Chinese traders who migrated to Malacca since the 15th century, married local women, adopted local culture and settled at the Straits Settlements of Malay Peninsula which later expanded to Penang and Singapore.

2. Art in this context refers to arts that are crafted and conceptualised by that the Nyonya defined in their embroidery, beading, porcelain and ceramic crafts using auspicious connotations of motifs and colours.

3. Palm paper in this context refers to the natural paper made from discarded waste of palm tree specifically empty fruit bunches.

1.9 Research Framework

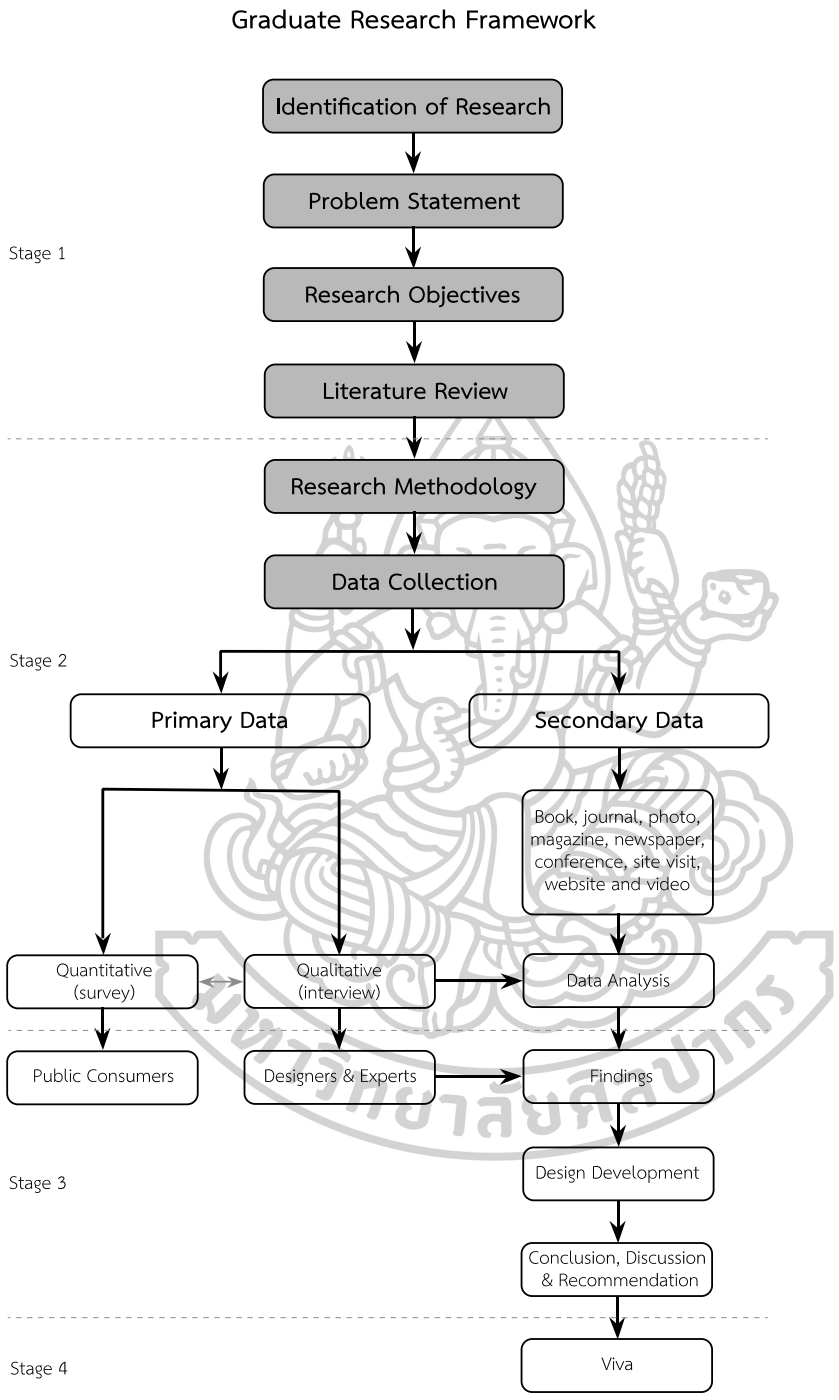

Figure 1 Research Framework (Yeoh, 2020).

Chapter 2 Literature Review

In this research, the main aim is to use palm paper to produce decorative items with the influence of the Peranakan heritage. The literature review chapter is elaborated in 5 parts to provide clear understanding on the reviewed literatures, theory selected and the masterplan of the research. Begin with Part 1, Part 2 and Part 3 on reviewed literatures formulated base on the keywords. Then follow by Part 4 which highlights the underpinning theory and the conclusion of Part 1 to Part 4. This chapter ends with the Research Framework.

Part 1

2.1 The Peranakan Communities

The Peranakan culture is known as the diverse hybridity influenced by the Chinese trade migration and European establishment (Muneenam, Suwannattachote and Mustikasari, 2017). The Peranakan is defined as a particular kind of Chinese with specific characters and represented differently in Malaysia, Singapore and Indonesia, as shown in Figure 1 below. Under the British colonial, Peranakan communities were known as the King's Chinese in which were given special status and relished benefits, stability and commutation with European credentials (Suryadinata, 2015). Such status was awarded to the Peranakan communities as an appreciation of dedication and backing from of the British Crown (Wee, 2015). Largely, the communities of Peranakan are the culmination whom embraced cultures of both Southeast Asian and Chinese with modern adaption from the Europeans, in which they conceived aesthetically and applied on to their way of life such as attire, speech and culinary (Wilkins, 2019). Further to that, the adoption of European lifestyle or Sino European can be found in grand building architecture, porcelain, jewellery, furniture, clothes, decoration and collection in which portrayed the wealth and societal position of the Peranakan families (Chan, 2011). Many of the elements used in the Peranakan adornments reminisced the styles of the Chippendale, Jacobean, Art Deco, Art Nouveau and Venetian (Lee & Chen, 2012).

During the mid 19th to mid 20th century migration wave, approximately 20 millions of Chinese from the coastal of China left for other countries in Southeast Asia by the sea route of

South China Sea whom settled at port of Malaya such as Malacca, Penang and Singapore, and about 3 millions left for Java in Indonesia also known as the Dutch East Indies, as shown in Figure 2 below (Wilkins, 2019). Throughout these centuries, only the Chinese traders were able to compete directly with Europeans of the East India Company. They raised families with local women to managed commercial activities during their return to China after the monsoon. Their children specifically daughters were espoused to promising and resourceful Chinese men and their heirs continue to maintain and build relations within the Hokkien of the Straits Settlement communities, as shown in Figure 3 below (Khoo, 1998). Likewise, the established Chinese men of Indonesia espoused local women from Bali and not from the Muslim communities usually from the lower cast in which elevated the status of local women and their descendants. Nonetheless, during the 17th century, the Kapitan China of Batavia in Indonesia took Balinese women as wives and their descendants later accepted lineage of influential Chinese (Heidhues, 1974). Commonly, the Kapitan China had few wives with usually the first wife remained in China to manage his family where else, his few foreign wives stayed and helped him (Chan, 2011).

In Malaya, at the British Straits Settlements of Malacca, Penang and Singapore may not be the birth places to every Chinese who lived there. Differential was made for those who were born there to be acknowledged as Straits Chinese or Straits born Chinese otherwise known as Sinkhek; outsider (Khoo, 1998) or cheena gerk; lower class Chinese in Peranakan Malays language (Wilkins, 2019). The term Straits Chinese is a provincial identification and Baba is the culture (Suryadinata, 2015). The Straits Chinese is also known as Baba but it is realised that Baba is Peranakan but not all Peranakans are Baba (Khoo, 1998). In the context of Baba Nyonya, the title of Baba is for Peranakan men was introduced by the British East India Company (Khoo, 1998), an appellation for men adopted from the Northern Indian and Nyonya for Peranakan women borrowed from the Portuguese (Wilkins, 2019). Baba is the term Northern Indian women used to address their spouse. The title of Nyonya also applied to Indonesian women but spelled differently (Khoo, 1998). The Peranakan communities have differences in terms of era and region, only by the 20th century the Javanese adopted the equivalent term of Peranakan (Suryadinata, 2015). The Peranakan communities from the same British Straits Settlements have differences although they originated from the oldest communities of Malacca (Teoh, 2015) in which their speeches were not alike, the Malacca Peranakan used more Malay in vocabulary (Baba Malay)

comparing to Penang Peranakan who preferred to mix Malay and Hokkien dialects and Singapore Peranakan language is more complicated (Suryadinata, 2015). Generally, well defined Peranakan are educated in English schools and adapted most European cultures (Wilkins, 2019) hence they are articulate in English and as well as Malay languages unlike the Penang Peranakan whom preferred to converse in Hokkien (Suryadinata, 2015) with the Malay patois and style (Oh, Abdul Razak, Hee, Lu and Rahman, 2019). In their communities, the later descendants of the Chinese traders that did not assimilate themselves with local Malay culture or speak Baba Malay unlike the Baba of the Straits Settlements (Khoo, 1998). The Peranakan of Indonesia was mainly a Malay speaking community whom subsequently picked up Dutch language after they received education in Dutch literacy (Suryadinata, 2015).

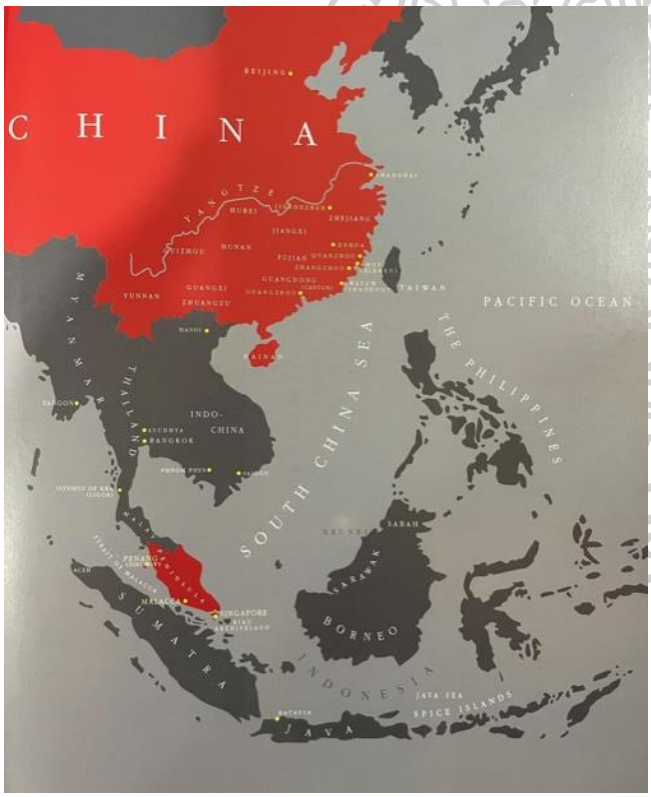

Figure 2 The map of China and Southeast Asia (Khoo, 1998, p.13).

Figure 3 Peranakan family (Lee & Chen, 2012, p.10-11).

2.1.1 Religions

The Peranakan communities practiced combinative religions of ancestor worship, Confucianism, Buddhism and Taoism (Baba Nyonya Heritage Museum, 2015). At the Straits Settlements, a place with different ethnicities many religions were formed specifically for those whom held strong cultural practices. The early Chinese built few temples dedicated to their combinative believes of ancestors, Taoism and Buddhism meaning in the Peranakan religion context, they were believed to exist with one another. There were some, mainly women adopted the superstitious believes from the Malay mythical rituals (Khoo, 1998). As time passed with influential European understanding, many descendants of Peranakan converted to Christianity (Wee, 2015), but even so they were unable to obliterate their roots of long-established Peranakan cultures (Khoo, 1998).

To many of the Peranakan, their ancestor worship was above all even the gods on the altars, doing so symbolised the values of filial piety and with optimism that they were rewarded similarly by their descendants, as shown in Figure 4 below. Rituals of tea and joss sticks were offered 2 times daily to the ancestral tablets at the specific altar (Chan, 2011) at the dawn and dusk which situated in the rumah abu; ancestral hall (Lee & Chen, 2012). The sin choo pai; ancestral tablets, painted images or photographs of ancestor, usually patriarch and even matriarch of families will be displayed nearby the grand altar. Semayang; prayers were also extended during death anniversary, Cheng Beng Festival; All Soul's Day, Hungry Ghost Festival (Chan, 2011), Winter's Solstice and Chinese New Year's eve (Lee & Chen, 2012). The philosophical teaching of Confucius believes were observed in the ancestral hall, on the gold gilded pai pien; wood slabs

etched with prosperous messages, wisdom phrases and morale quotes were hung on the walls (Chan, 2011). Commonly, the pai pien contained upheld filial values in Chinese phrases such as soo how wan; familial practices, twee wan; reminiscence and twee soo; remembrance. In the believes of Peranakan and even other Chinese, it was important to keep their ancestor spirits appeased with filial rituals, as shown in Figure 5 below (Lee & Chen, 2012).

The early Chinese immigrants whom were the ascendants of the Peranakan were strong Mahayana Buddhism believers which derived from the main sect Sarvastivadin (Believers in the Teaching of the Elders) of Northwest India dated from 1st to 2nd A.D. Followed by new sects of Mahayana and Hinayana Buddhism were well accepted in Sri Lanka and later advanced to the Southeast Asia. From Hinayana Buddhism then produced a new sect of Theravada Buddhism which was popular in Siam, Burma and Sri Lanka. Where else, Vajrayana Buddhism was more receptive in East India. The Guan Yin (Goddess of Mercy) were the most popular deity of Mahayana Bodhisattva worshipped by the Peranakan; she symbolized compassion and mercy (Khoo, 1998). The significant part of Mahayana Buddhism adapted by Peranakan was the combination of offering rituals, with burning of paper effigies and joss sticks (Khoo, 1998). In many homes of the Peranakan families, the deity of Guan Yin was placed on the sacred altar located at Deity Hall with other safeguarding deities, as shown in Figure 6 below (Baba Nyonya Heritage Museum, 2015) such as Zhang Fei, Liu Bei and Guan Gong; the legendary sworn brothers of war period mentioned in the literature of Romance of the 3 Kingdoms for their courage, fortitude and fairness. The grand alter was commonly decorated with flowers and during auspicious celebrations, fruits and sweet delicacies were offered as well. During the Chinese New Year, more grandeur offering platters with pineapple, sugar cane, huat kueh; steamed rice cake, kueh bakul; caramelised sticky cake and chien hup; caramelised meat was displayed accompanied by carved fruits at the sacred altar. Most traditional Peranakan homes were resemblance of Southern Chinese style as observed in the positioning of the altar facing the main doorway to safeguard the household from unwanted entities (Lee & Chen, 2012).

The turn of the 20th century, increased numbers of Peranakan changed their faith to Christianity, most of the time the ancestor altar stayed but the deities were reinstated with Christian symbols (Wee, 2015). Within the Peranakan, there were no major conflicts between the Buddhist and Christian believers except for minor customary disagreements but usually managed

peacefully within families. The matters of religion however did not impact much on the Peranakan communities as their main religion and customs remained. Some of the Christian Peranakan observed the family mourning, maintained their ancestor graves and celebrated Chinese festivals. Many Christian Missionaries specifically British and American Protestant groups formed bases at the Straits Settlements and Indonesia waited for China's abolishment of the 1842 Treaty of Nanking. Today, there are few prominent Christian churches at the Straits Settlements areas namely St. George's Anglican Church, Methodist Church and Church of Our Lady of Seven Sorrows which attended by the Peranakan. Masses and hymns were conducted in English and Malay languages (Khoo, 1998).

Figure 4 Ancestor altar (Lee & Chen, 2012, p.58).

Figure 5 Confucius pai pien (Baba Nyonya Heritage Museum, 2015, p.35).

Figure 6 Buddhism and Taoism altar (Baba Nyonya Heritage Museum, 2015, p.28).

2.1.2 Traditional Customs

Every Chinese communities of the Southeast Asia, each has their own cultural practices and the Peranakan had the grandest ceremonies among them. To the Peranakan, traditional customs were greatly honoured and grandiosely celebrated with proper practices and rituals reflected from their Chinese background. As the Peranakan lived among the many cultures of the Malay Peninsula, they observed traditional practices from China and Southeast Asia. Other than practices of ancestor worship, adapted Buddhist faith, prayed to deities of Taoism and accepted the teaching of Confucius, loyalty to family was highly regarded in their lives (Wee, 2015).

Commonly, in the Peranakan communities to conduct arrange marriage through a mediator which union was based on the Chinese medium, resulted by calculating the couple's date of birth and horoscope. For wealthy Peranakan, marriage was usually matrilocal which the groom moved into the home of his bride's family, as shown in Figure 7 below (Khoo, 1998). Sharing home with the bride's family sounded belittle to the groom if he was none Baba, commonly Singkeh whom newly migrated from China. The Sinkhek usually will condone as being part of the Peranakan family given him elevated status and connection in the new environment. The full Peranakan wedding ceremony lasted for dua belas hari; 12 days (Lee & Chen, 2012). One of the many traditional rituals were conducted during wedding but the most important was the cheo thau; combing hair ceremony which represented coming-of-age were

required for both the bride and groom at their homes, as shown in Figure 8 below (Baba Nyonya Heritage Museum, 2015) before the chim pang; tea ceremony of given time, this symbolised the beginning of the couple's union and makan choon; the first meal as married couple. On tiga hari; 3rd day, the married couple had to pay respect to the elders of both families with the tuang teh; tea serving ceremony. Followed by the 5th day ceremonies were the chia sia; invitation of the male society in which family and friends of the groom were requested to a party at the couple's wedding room. The end of wedding ceremony was marked with dua belas hari; 12th day with the ritual of female chasteness ceremony. Although the Peranakan wedding carried much attributes from Malay culture but the attires and ceremonies remained with the Fujian of Southern Chinese traditions (Lee & Chen, 2012).

The 1st month of a child's birth was celebrated with mua guek; full moon ceremony deemed as essential to the Peranakan family (Khoo, 1998). The ceremony started with cukur rambut; hair cutting and the cut hair was kept in the shell of coconut. Relatives and friends of the family were invited for a feast served with nasi kuning; turmeric rice, telur merah; hard-boiled egg with red dye (Wee, 2015). Sweet delicacy of green bean paste filled red dumpling were served and the design of the dumpling represent the gender of the child, male would be represented with the turtle and female with the peach, as shown in Figure 9 below. (Khoo, 1998). Then the child be presented to the ancestor altar for arrival announcement of new family member. At the same time, the name of the child would be made known by the elder of the family, chosen by the temple or by Chinese nobleman (Wee, 2015). Guests were in return with gifts with the contents of dried noodle, eggs and sweets (Khoo, 1998).

The Peranakan were particular when it comes to funeral ceremony in which old customs were followed strictly (Khoo, 1998) that did not differ from the 1050-256 B.C. Zhou dynasty Li Ji; Book of Rites (Lee & Chen, 2012). It was known that the Peranakan funeral was usually grand (Wee, 2015) and expensive as the family was supposed to show their familial values with richness gestures and supply guests with food and drinks, as shown in Figure 10 below. Commonly, funeral ceremony was organised from 3 to 49 days in which the burial would be conducted 3rd, 5th or 7th day and accompanied by chants and prayers conducted by either Taoist or Buddhist priest (Lee & Chen, 2012). The deceased would be cleansed, changed into new attires, placed into the coffin and 5 nails were needed to securely the shut coffin. To avoid bad luck, embroidered

cloth with protection motifs in blue was used to cover the coffin. During the ceremonial, hemp material clothes were worn by the members of the family from the beginning until the end of it (Wee, 2015). The photo of the deceased was placed on the offering table along with food offerings such as kueh koo; longevity dumpling, cooked food, fruits, dried noodle, rice and tea (Lee & Chen, 2012). As Peranakan were Buddhist-Taoist, they believed in afterlife were natural, hence burning of plenty paper effigies, paper money, candles and joss sticks were offered so that the deceased could have a proper life in the underworld, as shown in Figure 11 and Figure 12 below (Khoo, 1998). By the completion of the final prayer, the coffin would be moved out to the resting place. The journey would be accompanied by family members, lantern bearer and traditional music band, as shown in Figure 13 below. More of these offerings would be burnt during kong teck ceremony on the 7th day after the burial ceremony (Lee & Chen, 2012).

Figure 7 Peranakan wedding (Lee & Chen, 2012, p.86).

Figure 8 Tools used in hair combing ceremony (Khoo, 1998, p.79).

Figure 9 Turtle or peach shaped sweet dumpling mould (Khoo, 1998, p.71).

Figure 10 Funeral (Khoo, 1998, p.97).

Figure 11 Paper money (Khoo, 1998, p.53).

Figure 12 Paper effigy (Khoo, 1998, p.99).

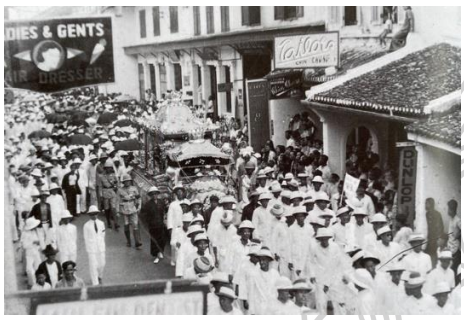

Figure 13 Final journey (Khoo, 1998, p.98).

2.2 The Baba

In the Peranakan culture, the male is known as Baba arrived from the lineage of mix parentage between Chinese father and local mother of the Malay Peninsula, being so the Baba was always honoured of his family name as well as heritage, as shown in Figure 14 below (Lewis, 2005). In reality during bygone periods, no foreign traders bring along their spouse as the journey deemed unsafe making it possible to espouse another (Khoo, 1998). During colonialization of Malaya under the Dutch in 1641 and British in 1795, preferences were given to the Hokkien Chinese such as traders, artisans and planters to invest on lands as Chinese were deemed purposeful and resourceful to the Europeans similarly to Indonesia. From the 17th to 19th century, the communities of Baba in Malaya as well Indonesia developed and thus cultivated their own culture identity (Lewis, 2005). During the peak of Peranakan in the 18th century, the most significant place that represented Baba was Malacca where grandiose architecture of homes belonged to wealthy families of Baba filled the once prominent Heeran Street; Tun Tan Cheng Lock Road (Wee, 2015). During the 19th century onwards, they were addressed as orang ada ada meaning renowned breed of culture, status and wealth as they held great influences in media,

politic and commerce (Wilkins, 2019). Through centuries, the Peranakan mostly made their wealth from tin, port commerce and agriculture (Lee & Chen, 2012).

The Peranakan did not plunder or embezzle from the country, their continuous wealth was the outcome of their endless dedication, confidence and persistence (Rajarao, 2018). Peranakan being the trade leader of Southeast Asia and with the European connections, they remained in absolute understanding with the Chinese kongsi; Chinese commerce association in Penang, owned by 5 important family surnames of Lim, Yeoh, Khoo, Cheah and Tan (Khoo, 1998). Another kinship association the Baba was affiliated to was Kian Teik Tong; network used in communities management and trades expansion. The Kian Teik Tong branched out widely on the platform of international trades connecting shoreline of Siam, Burma, Malaya and Indonesia. The British colonialization opened doors to abundance of Malacca Baba, offering them the entrepot commerce at the new port of Penang which promised the link with China and India (Suryadinata, 2015). The Malacca Baba arrived as the earliest settlers in Penang, they were joined by many Hakka Chinese to development to developed land they secured from the British thus leading to the great growth of Chinese population. During the opening of Singapore in 1819, similar approach and system was applied by the British. Hence by 1840 to 1880, the great migration of Chinese from China of various ancestry such as Cantonese, Hainanese, Teochew and Hakka arrived, mainly attracted by the opportunities provided by the British; ways of British control and political power gain (Lewis, 2005).

Figure 14 Baba (Baba Nyonya Heritage Museum, 2015, p.14).

2.2.1 Lifestyle

At the turn of the 20th century, many of the descendants of Peranakan were educated in the British system instead of classical Chinese due to commercial opportunities made offered by the British which leveraged their communities (Lee & Chen, 2012). Both the Baba and Nyonya were home schooled by British tutor, commonly by the spouses of British professionals or officials (Khoo, 1998). Many young Baba were sent to European countries to pursued tertiary education and due to cultivated Western ideology, some Baba later changed their faith from Buddhism to Christianity (Wee, 2015). The wealthy families of the Baba mirrored their lifestyles over the British in which deemed appropriate at that time as they were known to be commercial allies. The associations were in various ways such as driven in horse carriages, owned European brands of cars and kept imported pets (Khoo, 1998). The wealthy Baba were ardent for villas, luxury cars and equines, as shown in Figure 15 and Figure 16 below (Chan, 2011). They were alone members of non-Western elite cliques such as the Polo Club and Turf Club sharing their interests of breeding and competing equine with the Europeans, as shown in Figure 17 below (Khoo, 1998).

The Baba were much occupied with trades however they also indulged in pastimes with sports, games and entertainment. Outdoor European games were

popular at that time, the Baba enjoyed spending their outdoor leisure on football, badminton, cricket, tennis, rugby, lawn bowl as well as shooting games, as shown in Figure 18 below (Baba & Nyonya Heritage Museum, 2015). These games were held at the air well area of homes (Lee & Chen, 2012). The traditional staged puppetry plays from China were much favoured by the Baba which featured gods, legendary characters and prosperous animals, as shown in Figure 19 below (Khoo, 1998). Music was deep rooted in the Peranakan life, noticeably there were the keronchong; classical music during the European colonialism, dondang sayang; melodic poetic song and from the 20th century, many young Baba had their own bands which performed Asian and European music, as shown in Figure 20 and Figure 21 below (Baba & Nyonya Heritage Museum, 2015). The poetic fundamentals derived from pantun; classical Malay style of poem which found in the 16th century based on the records of The Malay Annals (Thomas, 1986).

With close affiliation with the Europeans, Baba adored current trendy songs of the Western, usually sung along to the tune of violin, accordion, piano, banjo, mandolin, gramophone and even radio. The dondang sayang and keronchong songs were also played in wayang Peranakan; Peranakan theatre (Tan, 1993) and bangsawan; Malay performance (Lee & Chen, 2012). The Baba was very actived in ronggeng; social dance, commonly held at communities gathering and party which also led to Western styles of dancing such as foxtrot, tango and rumba, as shown in Figure 22 below (Tan, 1993). Ocassionally, Baba from wealthy background held banquets with ronggeng activities (Baba Nyonya Heritage Museum, 2015) as they enjoyed the advantages from parties attended by their European patrons (Khoo, 1998). Reading was essential to Baba although many later Baba lost their competence in Chinese, they preserved the fascination on Chinese literatures through the Baba Malay version namely The Water Margi (Chrita Song Kang), Journey to the West (Chrita Seh Yew) and Romance of the 3 Kingdoms (Chrita Sam Kok), which translated by the communities of Peranakan, as shown in Figure 23, Figure 24 and Figure 25 below. The Baba were also avid readers of Western classics authored by Shakespeare, Tomas Hardy, Alexander Dumas, Charles Dickens, George Elliot, Bronte Sisters, Leo Tolstoy, Hall Caine and Jane Austine (Lee & Chen, 2012).

Figure 15 Villa (Khoo, 1998, p.44).

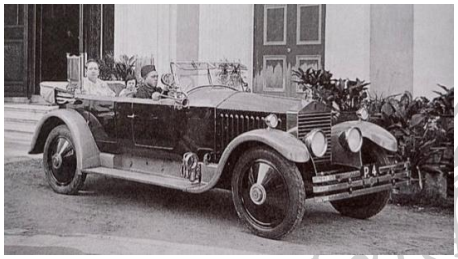

Figure 16 Luxury car (Khoo, 1998, p.111).

Figure 17 Club meeting (Baba & Nyonya Heritage Museum, 2015, p.10).

Figure 18 Tennis (Baba & Nyonya Heritage Museum, 2015, p.77).

Figure 19 Chinese puppets (Khoo, 1998, p.117).

Figure 20 Music band (Lee & Chen, 2012, p.98).

Figure 21 Dondang Sayang (Lee & Chen, 2012, p.99).

Figure 22 Ronggeng (Lee & Chen, 2012, p.103).

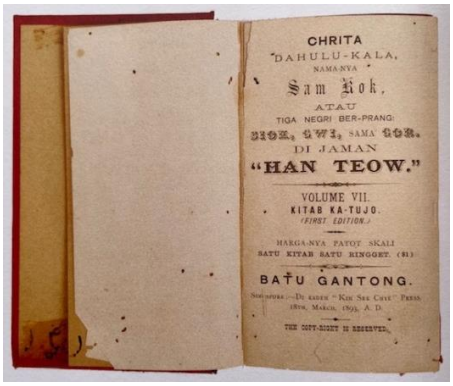

Figure 23 Translated Chinese to Peranakan patois literature (Wee, 2015, p.218).

Figure 24 Literature with visual (Wee, 2015, p.222).

Figure 25 Book titles (Lee & Chen, 2012, p.92).

2.2.2 Economic Contributions

All through the years, the wealth of Peranakan was greatly achieved from port trades, agriculture and mined tin (Lee & Chen, 2012). The farsighted Baba were earlier than many Chinese, and with familiarity managing trades the Western approach through their growing Malacca trades (Wee, 2015). The Baba were very acute and honoured in various kinds of cross

country trades and strong relation in networks (Lee & Chen, 2012). With fluent English, many of the Baba became the middlemen and liaison for the Europeans such as established treasury and trading institutions with provincial communities (Wee, 2015). In the 19th century most of them owned plantations, tin mines, spice and opium farms. Nevertheless, the growing port commerce advantages brought their expansion to places such as Penang, Singapore, Thailand and Indonesia (National Museum Singapore, 1989). With broad trading opportunities, the Baba maintained close connection as to gain support from the communities kongsi; Chinese commerce kinship association of members from the same dialect, lineage and location. The most important association of Penang were Khoo kongsi, Yeoh kongsi, Cheah kongsi, Lim kongsi and Tan kongsi. Through the kongsi, the Baba formed larger connections in trade expansion with assistance from direct families and kinsfolk in maritime, mining and farming, as shown in Figure 26 below (Suryadinata, 2015).

Maritime trades were known as the core commerce of the Baba throughout centuries which dominated the rivers and oceans of Southeast Asia. From wooden vessels with huge sails (schooner, brig and barque) to sizable steamer ships were used as the essential waterway transportation much depended in ferrying stocks and passengers. In 1869 at the Penang port, total of 81 units of these vessels were registered, mainly owned by the Baba of the 5 prominent kongsi families whom controlled 10 important trade and maritime companies. These vessels sailed along the maritime lines of Southeast Asia passed through the South China Sea and reached as far as Southern China for international trades and freights. Generally, the maritime transportation wasn't the producer of wealth for the Baba but the trade stocks which they transported were (Suryadinata, 2015).

The trade stocks transported were mainly agriculture gains which started earliest with pepper planted by Chinese in Penang later grew broadly in Singapore on the land given by the British, usually located on inner land away from the Straits Settlements areas. The pepper planting accompanied with gambier was cultivated was a match with Indonesia as pepper at that time was an export commodity to foreign countries (Khoo, 1998). The pepper condiment was popularly planted by the Batak tribe in Acheh, Indonesia and introduced to the Malay Peninsula. The Penang port was the acquisition ground for condiments specially pepper. As to monopolised on the pepper trades, the industrialist Baba created close affiliation with Indonesia rulers who

controlled the planters. Most of this pepper was exported to China, India and Europe (Suryadinata, 2015).

Opium was another major trade which introduced and controlled by the British East India Company through the acquisition of poppy estates of India which was also planted in the Malay Peninsula (Khoo, 1998). Opium was a treat for the wealthy and essential for the poor (Suryadinata, 2015), smoked with mixture of tobacco leaves (Khoo, 1998). Due to the expansion of tin mines and plantations in Northern Malay Peninsula, Eastern Indonesia and Southern Siam where labourers were based, the demand of opium escalated and it became a profitable commodity. Hence with this, the Baba expanded their development of opium estates not only in bound areas but also monopolised opium of Siam, Burma, Hong Kong, Sarawak and Sabah (Suryadinata, 2015).

The highly demanded and priced tin of the Southeast Asia was mineral which was long founded and traded since the 10th century but in much lower amount until the British started the tin plates production which later attracted the investment from Baba in mining of tin (Suryadinata, 2015). With growing demands poured in from the China, India and European trades, more needed to be done in grasping the opportunities. The opening of Suez Canal in 1869 had expedited further demands by providing shorter water routes to Europe ports. Metal was in demand, but tins were exhausted by the Portuguese and Dutch in Sumatra, Indonesia. Hence, the following tin revival took place in Perak, Malay Peninsula which financed by renowned Baba from Penang and mining in return had risen the economy there (Khoo, 1998). By 1870, many Baba were the influential force on tin trades locally and Phuket, Siam. Locally, Larut of Perak was the most lucrative tin producing place in which dominated by the Baba, whom financed and owned the mines as well as the metal production companies there. Furthermore, this industry benefitted the Penang port greatly; known as the tin trade port of Southeast Asia in the 19th century (Suryadinata, 2015). Exceptional profits were gained from the export of tin minerals to the European countries, hence this trade had placed Malaya as the forefront of British colonised country in which the tin was recognised as an important commodity in the Southeast Asia (Kratoska, 1998).

In order accommodate their enterprising trade, from the 19th to 20th century onwards the Baba also owned commercial plantations of rubber and later, oil palm (Wee, 2015). The early

Malacca Baba were the first to developed rubber but also oil palm and pineapple plantations in which many of them were renowned plantation owners, entrepreneurs and white collared employees. In 1884, Baba Tan Chay Yan of Malacca was the first to grow rubber plantations (Rajarao, 2018) and followed by prolific spice plantations owner such as Tan Chay Yan and Justice of Peace, Baba Chan Cheng Siew converted to many of his plantation crops to rubber (Baba & Nyonya Heritage Museum, 2015). This had gotten many Baba ventured into properties and rubber plantations such as Tan Cheng Lock, Tan Chin Tuan, Song Ong Siang, Lee Cheng Yan, Tan Beng Swee and Tan Kim Seng (Wee, 2015). Under the British colonialism at that time, stimulus was much provided for foreign interest as rubber was considered a commercial commodity, especially providing for the industrial era of many European countries. There were also the London Agency Houses and Singapore Merchant Houses which provided fund facilities for commercial purposes that impacted the rubber growers of Malaya (Rajarao, 2018). The rubber commodity promised lucratively due to industrial demand until the mid of 20th century, which the economy trend moved to palm oil. This has influenced many rubber plantation owners converted their trade to oil palm (Shevade, 2019).

In 1870, the oil palm was offered to Malaya by the British, approximately during similar period of the rubber crop which originated from the Amazon Forest of Brazil. Back then, not much interest in the oil palm commercialization as rubber was more known due to the upswing of European automotive market (MPOC, 2017). Although palm oil is pervasively available in Western Africa, it was the British who took the opportunity to market it internationally significantly during the growth of export demand in the British Industrial Revolution era (The Oil Palm, 2018). The Portuguese monopolized in 1434 and 150 years later, the British and Dutch joined in (MPOC, 2017). In early 1903, the oil palm was already introduced by the Dutch in Sumatra and Java of Indonesia and from there it proved to a lucrative commercial crop and productive throughout the year (Rajarao, 2018). The production of palm oil was highly demanded due to its commercial value from consumable oil, lubricants to soap, therefore the demand drove the Europeans to expand and develop the oil palm plantations in Western Africa, Sub-Saharan Africa and followed by South East Asia (The Oil Palm Organization).

The journey of oil palm journey in Malaya to becoming an agriculture commodity was credited to French businessman, Henri Fauconnier. He left England for his great agriculture

interest in Asia. When he arrived in Malaya, he took the employment opportunity at the Jalan Akob Estate in Kapar, Selangor (MPOC, 2017). In 1917, Henri Fauconnier planted the oil palm vastly in his Tennamaram Estate, Rantau Panjang, Selangor in which marks the beginning of the commercial plantations of oil palm and production of palm oil sector in Malaysia (MPOC, 2016). With the effort of agriculture plans by the government, the rapid growing oil palm industry was used in 1960s to substitute the nation's economy dependency on tin and rubber (MPOC, 2016). By 2016, there are 5.64 million hectares of oil palm plantation Malaysia Peninsula and more has been extended to Sarawak and Sabah (Rajarao, 2018), making Malaysia as one of the biggest exporters and producers globally on palm oil products (MPOC, 2016).

As time passed, the Baba progressively took position in the white collar sectors especially in the government department The European educated legal advocates or barristers were employed by British based commercial and law companies (Khoo, 1998). There were countless of great Baba whom had contributed endlessly in building the economy of the country and to the communities of the Straits Settlements were Tan Cheng Lock; statesman of Malaya, Tan Siew Sin; commerce minister of Malaya and finance minister of Malaysia, Gan Eng Seng; English and Chinese bilingual school founder; Tan Chay Yan; rubber agriculture founder of Malaya; Tan Kim Tian; Malacca maritime transport merchant, Tan Tock Seng; Singapore Hokkien association president, Cheang Hong Lim; Singapore opium trade leader, Lee Chen Yan; Singapore maritime transport merchant, Lim Boon Keng; Penang social activist, Lim Leng Cheak; Penang maritime transport merchant and many more (Asian Civilisations Museum, 2015).

Figure 26 Khoo kongsi of Penang, Malaysia (Yeoh, 2020).

2.3 The Nyonya

The female of the Peranakan is known as Nyonya, in which the title of Nyonya derived from Javanese, Indonesia which was loaned from the Dutch who addressed grandmother as Nona that also meant non-local espoused woman. It could be a general term used to address all non-local at that time. Nona was used in the old language of Portuguese in Macau and Goa as a term for local woman espoused to European, as shown in Figure 27 below (Wee, 2015). The origin of the Nyonya is quite concealed, almost unnoticeable and not much was documented on them in comparison to the Baba. The Nyonya were kept from the public eye until the 20th century which could be due to the chauvinistic character of the Chinese spouse. As there was none migration of Chinese female until the 17th century, hence the women espoused to the Chinese males would be of local women of Malay and non-Malay who were absorbed into the early Chinese integrity and in actuality was the use of Malay language in their household which was widely spoken by their children (Lee, 2016). The Nyonya of the Malay Peninsula mainly spoke Melayu Pasar and were given no education opportunities unlike the Baba but were adhered to Chinese culture, learnt through customs and practices (Lee, 2015). There are also few other circumstances that local women of Southeast Asia such as Balinese and Batak labourers from Indonesia and Siamese from Penang (Lee, 2016).

In the Peranakan household, there were many rules to discipline the Nyonya (Baba and Nyonya Heritage Museum, 2015). Commonly, the practices of proper lifestyle and habits spouses and daughters were expected by the Baba and older family members (Lee, 2016). There was particular area of the house that young Nyonya was deprived unless with companion such as locations near the entrance which ornately decorated with door screens to prevent young Nyonya being seen by none household members. Hence, the young Nyonya had to peep through the gap of the screens to watch (Baba and Nyonya Heritage Museum, 2015). There was only 1 day in a year, that Nyonya were allowed out was during the Chap Goh Mei festival, that was also to seek potential suiter (Khoo, 1998). In the Peranakan communities, there were also inequality of standards regarded to genders in the context of literacy and development; following the path of traditional Chinese as daughters would be raised by the Nyonya and the sons were to follow the Baba. Most of the earlier wealthy Peranakan households, young Nyonya were expected to be taught by her mother on matters of marital and house chores where else young Baba would be

sent to China for education and exposure. The contributions of Nyonya were greatly observed in the areas of domestic, traditions and customs which shared similarity with the Chinese and Malay counterparts which were refined and renewed (Mahmood, 2004).

In the late 19th century with the arrival of influx China immigrants, women of Chinese origin imitated the living ways of the Nyonya with objective of being known as a respected women rather than prostitutes or labourers (Turnbull, 1980). There were Chinese origins who preferred to be assimilated Peranakan or addressed as Baba and Nyonya as doing so helped to elevate their status in the society although they were never raised and born in Southeast Asia (Rudolph, 1998). By the Japanese occupation in 1941, all Chinese including Peranakan went through hardships as their equities and belongings were taken forcefully. Hence, this was the turning point for the Nyonya to earn in keeping their families together. Unused with trade practices, the Nyonya turned to their home culinary skills and sold the products through a middle person usually male of Indian race who went around selling delicacies using large shoulder carried tiffin, commonly seen until the mid of 20th century (Chan, 2011).

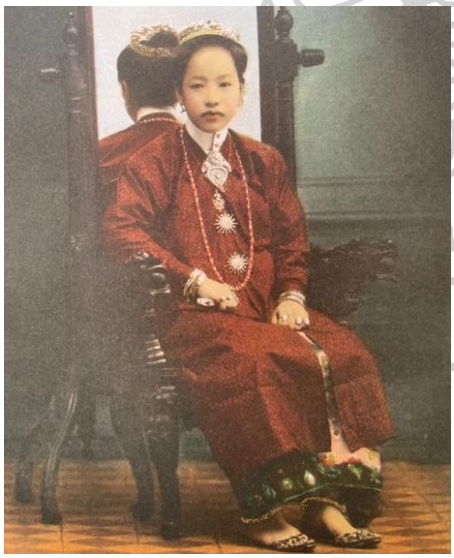

Figure 27 Nyonya (Chan, 2011, p.10).

2.3.2 Domestic Contributions

The life of the unmarried or young Nyonya were rather isolated, they could only catch glimpse of the exterior happening through the small opening of the walls or screens. They were not expected to question much or know about the exterior. Generally, the unmarried or young

Nyonya were not allowed to have much care less enjoyment regardless of their background and often stayed in the household engaged with house chores such as culinary and needlework, as shown in Figure 28 below. All these were necessary development for Nyonya, getting her prepared her for future as spouse and lady of the house (Khoo, 1998). The Nyonya, other than just as the symbolism of matriarch with domestic responsibilities of the Peranakan families, in fact they played an ultimate role in life and even more to the Peranakan communities. Arranged marriages proved that the lives of the Nyonya were very much destined in broadening the status and influence of her family. In short, the duty of the Nyonya did not end with the domestic welfare but also to establish links for her family. Nevertheless, the marriages between Nyonya and Sinkhek were never favourable to the Peranakan communities but having new blood was crucial in not only in status and wealth but also temperaments and principles (Ng, 2016).

Most of the time, the Nyonya were known as uneducated and ignorant in which had caused their interest in games betting, relying on spouse on financial support, believing in supernatural and having limited dependable skills. Hence, the only way to reform the lives of the Nyonya was to introduce education and this happened in the Peranakan communities between late 19th century to early 20th century (Lee, 2016). There were thoughts of reforming the Nyonya with cultural understanding, religion and civic education (The Peranakan Association Singapore, 2015). The Nyonya had some education, they were home schooled even for musical classes taught by mentors or British teachers, usually spouses of British officials (Khoo, 1998). The standard of available education for Nyonya was relatively low, very basic as good as primary school (Ng, 2016). However, the Singapore Chinese Girl School was developed in 1899 which catered for secondary education. The reformation of the Nyonya did them proud with producing the first female medical practitioner, Dr. Lee Choo Neo, the first president of Chinese Ladies Association, Mrs. Lee Choon Guan and the Prime Minister's wife, Madam Kwa Geok Choo (The Peranakan Association Singapore, 2015).

Figure 28 Needlework of the Nyonya (Yeoh, 2019).

2.3.3 Lifestyle

Other than domestic works of the households, the Nyonya spent much of their pastimes with much enjoyment within complimented with British style noon teas which commonly served between late noon of 3 to 5. Teas accompanied with traditional Nyonya kuih, scones and sandwiches were served to guests invited over for games; usually family members, neighbours and friends, mainly only Nyonya (Wee, 2015). The Nyonya enjoyed pastimes with assortment of entertainments with indoor games such as cherki and mahjong were their favourites and also the Nyonya, the way of games share similarity to gin rummy played within the circles of families and friends, shown in Figure 29 and Figure 30 below (Baba & Nyonya Heritage Museum, 2015). Not forgetting that the Nyonya also had great interest in writing diaries, reading translated literatures and habitual betel nut chewing (Wee, 2015). Not much of details were documented on the early Nyonya except from their writing in comparison to the Baba, only later with the availability of photography equipment in the late 19th century that one could understand more of their lifestyle (Lee, 2016).

The table game of cherki was reserved for the older Nyonya and Bibik; Peranakan senior matriarch who held the social permits to organise betting activities. The young unmarried Nyonya were not allowed to attend as they were supposed to contribute on household duties. During the games, the Nyonya talked and joked while enjoying the kneading of hired masseuse (Khoo, 1998). Cherki originated from the Chinese card game known as leaf which consists 3 mains of Manek, Batik and Ban. Quite often the Nyonya spent much noon time with invited guests on organised games and commonly attended by Euro-Asian joined in as well. There were stories about Nyonya falling into cherki game addiction and ended losing all their allowances on gambling. The other

popular non-card game was chongkak which played by 2 persons on a boat shaped wood using saga seed or sea shells. The player with the most collection will be the winner (Wee, 2015).

Among all, the Nyonya favoured mostly was the betel nut chewing habit which could be observed during the indoor games and even in their daily lives. The betel nut chewing was combination of gambier, lime and betel nut wrapped in leaves of betel, introduced by the Indian and adopted by the Malay communities of the Southeast Asia, shown in Figure 29 below (Wee, 2015). The betel nut chewing was popular habitual of Southern China, India and Southeast Asia commonly in the provincial areas (Khoo, 1998). The tempat sireh; betel nut set was an important item symbolizing tradition and status of Nyonya specifically the Bibik (The Peranakan Association Singapore, 2015). Generally, the offer of betel nut set or even the leaves of betel represents friendship, agreement, invitation and engagement being acknowledged. The betel nut set are made of many materials such as natural fibres, timber, bamboo and ore (Khoo, 1998). Some customised sets for the wealthy Nyonya are made of rare and expensive materials like gold, mother of pearl, tortoise shell, silver and special timber, shown in Figure 31, Figure 32 and Figure 33 below. The centuries old habit of betel nut chewing slowly disappeared in the modernised world as it was noticeably unhealthy and unrefined (The Peranakan Association Singapore, 2015).

Figure 29 Cherki card game (Khoo, 1998, p.121).

Figure 30 Mahjong tile game (Khoo, 1998, p.118).

Figure 31 Betel nut set in silver with condiments (Khoo, 1998, p.68).

Figure 32 Betel nut set in rattan (Khoo, 1998, p.66).

Figure 33 Betel nut set in wood and mother of pearl inlay with condiments (Wee, 2015, p.224).

2.4 The Downturn of the Peranakan

The pinnacle of the Peranakan era was during the 18th and 19th century and took a downturn during the 20th century. The 1929 Great Depression of Europe impacted dramatic declined of commodity prices resulted significant dive on tin and rubber and hence incited the Nanyang Depression which caused many industry entrepreneurs loss greatly in wealth (Chan, 2011). Towards the end of the 19th century, many Baba from Penang whom were from the trades faced the toughest challenge with the arrival established European companies with modern technologies and substantial funds. These companies such as SSC; Straits Steamship Company, STC; Straits Trading Company and KPM; Koninklijke Paketvaart-Maatschappij or Royal Dutch Packet Company were direct immense competitors in maritime, tin mining and manufacturing which dominated by the Baba. The Baba unitedly responded by establishing Penang Khean Guan Insurance Company, Eastern Shipping Company and Khaw Group which operated with European commercial system and connected all clans of Chinese. As the Baba were striving, the colonial power of British implemented new political and economy orders which were not in favour of the Baba (Suryadinata, 2015).

With the inpouring arrival of Sinkhek in 1877 played a role in changing the impression of the Peranakan communities. With the economic expansion of mining and plantation activities, there was shortage of labourers, hence mass immigrants of Southern China were brought in. Within the period of 10 years, some of the Chinese labourers had reached the wealth level of the Baba. Many of the wealthy Sinkhek and their Chinese wives tried to assimilate into the Peranakan communities by adopting the their lifestyles but in many ways remained more Chinese than Peranakan. Hence by 1930, the Peranakan were outnumbered in population and over took by the

Sinkhek, known as the modern wealthy group of Hokkien speaking Chinese entrepreneurs and by 1940, the Chinese population in Malaya consisted of 66.67% of Sinkhek (Khoo, 1998). The population of Sinkhek group had grown into few hundred thousands, some may still relate to the Peranakan communities and produced many outstanding entrepreneurs and merchants such as Saw Choo Teng, Loh Boon Siew, Saw Seng Kew, Lim Lean Ten, Tan Hoay Eam and Yeap Chor Ee. The commercial keystones of Sinkhek mainly on production, rubber and finance institution (Suryadinata, 2015).

Not much of revival for the Peranakan as situation got worse for Malaya with the British abandonment during the arrival of World War II and invasion of Japanese Occupation as most equities and wealth of the Peranakan were forcefully removed (Chan, 2011). All these had caused great loss to the Peranakan communities, many had to practice thriftiness with expenditure. They had to adapt living without chef, care taker and helpers and some even had pawned their luxuriance and properties to order to survive (Mahmood, 2004). As the war ended in 1945, the British recoiled back to Malaya but the view has changed as the local Malays begun to demand for Independence (Chan, 2011). With the development of the Malay Federation in 1948 and the completion of the British Colonisation in 1963 (Khoo, 1998) had brought an end to the Peranakan and returned to the common Chinese (Wee, 2015). With the change of political situation in Malaya, the Peranakan knew they were no longer in support of the British hence continued to salvage opportunities with their own resources (Khor, 2003). The Peranakan communities became closer to the Sinkheh through intermarriages, this has gradually assimilated into the common Chinese (Chan, 2011). As for the Sinkheh and their new generations, they continued to control the economy during after the World War II and also after Malaya achieved its independence from the colonialism of the British (Suryadinata, 2015).

2.5 The Contemporary Peranakan

After the British era, the Peranakan communities faced great declined but they are still around in Malacca and Penang of the Malaysia Peninsula and Singapore, living the way of life very much adorned by contemporary and European way of life, as shown in Figure 34 below (Wee, 2015). Currently in the Southeast Asia, predominantly the communities of Peranakan still prevail in many countries such as Malaysia, Singapore and Indonesia (Suryadinata, 2015). The

decline is natural as without the British endorsement on Peranakan status, their acculturation was comprehended into common Chinese. Hence, the new generations speak less Peranakan patois, do without customary practices and prefer European fashion (Wee, 2015). As the traditional way of life for the Peranakan undoubtedly ended, those of the city folks became modest and self-dependence as they needed to acclimate to the new living and further to that, many Nyonya had opportunities in obtaining British education so they could accomplish better in the commercial industry (Khoo, 1998).

Currently, highly educated Peranakan mostly have detached themselves from the trades to join the expertise industry like finance, medical and law. There are few who ventured into entrepreneur trades but strongly eclipsed by the Sinkhek such as IOI Group, Genting Group, Sunway Group, YTL Group and Berjaya Group. Many of them advanced in managing passed down properties of estate, land and building (Suryadinata, 2015). The new generation of Peranakan continues to manage existing equities, investments and also expanding towards the international market with financial support from the revenues acquired through government granted privileges during earlier period of economy (Kuronuma, 2014).

Figure 34 Contemporary Peranakan family (Lee & Chen, 2012, p.114-115).

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2.6 Summary

Comprehensively, going through the history of diasporic Chinese in the Southeast Asia, one must not assume the singularity of the Chinese which consists of different origins and layers

as some may be raised and accultured locally and some arrived from China at different periods (Hall, 2006). The closeness of relationship and constant communication between the Chinese of China, Malaya and Indonesia were documented since 600 BCE as merchants and travellers. They sailed far across to the South China Sea without bringing along their wives and stayed in the Malay Peninsula during the monsoon season which took months before they go back to China. Hence, many of them set up another family unit by taking in a local woman as spouse who also could help in managing their trades when they were away. The beginning of Chinese influx to Malaya was observed during the late 18th century which was much supported by the British in the Straits Settlements of Malacca, Penang and Singapore. The children of the union of Chinese men and local women from the Straits Settlements produced a hybridity of new culture known as the Peranakan. In the Peranakan communities, the men are known as Baba and women as Nyonya. The Peranakan were Buddhist-Taoist but also practiced ancestor worship and uphold the teachings of Confucius. Due to their rich cultural of Chinese and local background, they received few main events with elaborative and grandeur traditional customs such as wedding, full moon and funeral.

The Baba were known to be influential and enterprising also with the connections in the Chinese Commerce Association, they were dealing with different trades on international trades with countries across the Southeast Asia as well as the Europeans. The wealth of the Baba commonly derived from trades such as maritime transportation, spice trades, plantations and mining of tins. Most Baba were British educated and enjoyed European lifestyle to be allied and competitive with them. With their success, they were grateful with the British support in facilities and opportunities but they never forget China as their roots. As for the Nyonya, they were understood to be more domesticated and rarely be seen in public. Most of the young Nyonya spent their time on household duties to prepare themselves in future marriage unlike the married and older Nyonya spent most of their pastimes on gambling and betel nut chewing. Early Nyonya were uneducated and unexposed, putting them in troubles of gambling, superstitious and not financial independent. With reformation by 20th century, the Nyonya were given sufficient secondary school education at Singapore Chinese Girl School which proudly produced few female professionals.

About this time, it marked the downturn of the Peranakan which caused by the Great Depression, Nanyang Depression, intense commercial trade competitions with the Europeans, World War II, formation of the Malay Federation and the end of British colonialism. At that point, the Peranakan had faced tremendous loss and had practice prudency with their lifestyles. The Peranakan foreseen the situation, hence they grew closer to the Sinkheh through arranged marriages which gradually assimilated them into the common Chinese. The Sinkheh braved through and continues to make their marks on the economy in Malaysia today in organizations such as IOI Group, Genting Group, Sunway Group, YTL Group and Berjaya Group. Today, the Peranakan of Southeast Asia still prevail in many countries such as Malaysia, Singapore and Indonesia just that the new generations are more adaptable to western cultures, practice less Peranakan customaries and patois. The educated Peranakan commonly detached themselves from the trades to join the expertise industry like finance, medical and law. Those that inherited passed down ownerships, many of them continue to manage existing equities, investments and also expanding towards the international market with financial support from the revenues acquired through government granted privileges in the early days of their forefathers.

Part 2

2.7 The Peranakan Arts and Crafts

In the homes of many wealthy Peranakan, ornately decorative arts were commonly seen such as rosewood furniture, fine attires, jewelleries, chandeliers, customised China porcelain, England tiles, Venetian and Bohemian glass wares. All these Peranakan decorative collections were gained of extravagant spending and luxury lifestyle from international trades (Kee, 2009). The flourishing Peranakan communities of the late 18th century in the Malay Peninsula was concurred with the Romantic Period of the western counterparts but the arts of Peranakan were not influence by such development as it was still maturing (Khoo, 1998). The unique aesthetic form of the Peranakan arts derived from combination of Chinese, local and European inspiration (Cheah, 2010).

The subject of arts and crafts were defined as the pride of every pronounced dynasties in the olden days of China which were defined clearly during the Song Dynasty from 907-1279, into

the categories of folk art and cultivated art. The folk art was considered decorative with symbolism which merely composed of basic ways of crafting using inexpensive materials, mostly produced by the villagers and the cultivated art was produced using technology and tools which is more forward in the urban (Khoo, 1998). Commonly, the Peranakan arts are categorised under folk art with the combination of European and Qing Dynasty styles which are produced mainly for leisure or crafted for specific traditional ceremonies. Crafting methods and designs often changed as it developed over the time specifically through mimicking (Khoo, 1998). In the Peranakan arts and crafts, there are many areas in decorative arts such as embroidery, beadwork, porcelain and tile, as shown in Figure 35, Figure 36, Figure 37 and Figure 38 below. Not all of these were crafted by the Peranakan, such as jewellery and porcelain were crafted to the customised taste of the Peranakan retail. Hence, only the needle works of embroidery and beading are known as the authentically and truly Peranakan decorative arts (Cheah, 2010) specifically the Nyonya that have vanished (Ho, 2008).

Figure 35 Embroidery (Yeoh, 2019).

Figure 36 Bead Work Purse (Yeoh, 2019).

Figure 37 Porcelains (Yeoh, 2009).

Figure 38 Peranakan Tiles (Yeoh, 2019).

2.7.1 The Embroidery

Many young Nyonya aged from 8 to 10 years were expected to spend most of their time even on leisure to pursue domestic tasks in their homes and needlework crafting served as part of competence in marriage. The bride in the Peranakan communities were expected to create some

decorative items for her wedding room (Khoo, 1998). The knowledge of needlework is not only important but essential set of skill such as sew, embroidery and beadwork (Cheah, 2010). The quality and material used also represented her background as these work could only be produced by upper class society who had plenty of free time and the cost of materials were expensive (Khoo, 1998). The embroidery works of Nyonya in Malacca and Singapore were similar to the ones from Sumatra in Indonesia which consisted of couched silver and gold yarns and the Nyonya in Penang prefers silk yarn, gilded yarn and beads. The silver and gold yarns were brought in from Europe and China, the differences were the purity of minerals and yarn design, and gilded yarn was brought in from India (Khoo, 1998). These were used for early embroidery works applied on small items such as pillow ends, shoe front, handkerchief, curtain, table cloth and bed linen, as shown in Figure 39 and Figure 40 below. Most of these works could be seen commonly exhibited in the wedding room for adoration (Tong, 2015).

Among the embroidery works, one that stood out was cut work lace which the borders of particular motifs were sewn using satin stitch on fabric of choice then followed with cut work applied on selected void areas of the motifs, as shown in Figure 41 below. Intricate motifs of cut work were commonly applied on the lapel, cuff, collar and hem of the voile kebaya sulam; the Nyonya blouse made of translucent voile with lace ornamented edges (Khoo, 1998). The lace appearance of the kebaya sulam were influenced by the European, as shown in Figure 42 below. The Portuguese, Dutch and British have had similar fashion of lace edged blouse which had been introduced to Java and later to the Malay Peninsula. Kebaya sulam marked the modernity of the Malay Peninsula Nyonya and they had altered the aesthetic of the lace from plain white to colourful detailed cut work embroidery, as shown in Figure 43 below (Mahmood, 2004). Through their Medan kinship network, Nyonya of Penang and Sumatra spent most of their leisure time on embroidery works and were talented on this craft (Khoo, 1998). With the fondness of vividness and elaboration, Nyonya commonly produced lace embroidery works which contains strong contrasting colours combined with plant and geometric motifs derived from the European and Chinese flairs; notably the Chinese motifs resembled those of the Peranakan porcelain (Kee, 2009).

Figure 39 Couched embroidery on curtain (Yeoh, 2019).

Figure 40 Couched embroidery on shoes (Wee, 2015, p.109).

Figure 41 Process of cut work lace process (Mahmood, 2004, p.99).

Figure 42 Cut work lace embroidery on kebaya sulam (Wee, 2015, p.90).

Figure 43 Embroidered lace designs (Mahmood, 2004, p.100).

2.7.2 The Beadwork

The beadwork was the only Peranakan which carried the least of China influence (Khoo, 1998) as there was none such industry there and this craft was an attribute from the Malay in Malacca (Wee, 2015). Foreign beads were brought in to the Malay Peninsula by the Chinese from China and Indian of India during the early trading periods (Khoo, 1998). The earliest beads used were known as seed beads which derived from fruit seeds, pearls, metals and shells commonly used by the Nyonya were 0.5mm in size (Wee, 2015). The Nyonya did not wear the beads as part of their jewelleries such as the women folks of Africa, Egypt, America Indian and few local ethnic groups. It was during the 15th century with the growing Malacca port trades, the European

brought in glass beads as the medium for barter system. At the period of post Renaissance , there were many glass beads producers in Europe such as Italy, England, France, Germany, Belgium, Holland and Czech Republic but none dominated the industry as the Venetian glass makers of Venice of Italy, as shown in Figure 44 below (Khoo, 1998).

The exquisite Nyonya beadworks commonly contained few variants of beads such as the seed, carved metal or mineral oxidised, glass and drawn beads. With these beads, a needle and thread were the only materials needed for beadwork crafting using the 3 methods beading techniques such as stringing, threading and stitching, as shown in Figure 45 below (Ho, 2008). With the arrival of European at the Straits Settlements, similarly to the embroidery works, the traditional Chinese motifs and colours with European flair were popular and could be commonly seen on the crafts of Nyonya beadworks such as swan, blue bird and rose instead of the Chinese crane, phoenix and peony. The styles of Victorian, New Rococo and Art Deco were great influences to the Peranakan communities, hence paved spaces for the Nyonya to craft more by using beadworks for own enhancement or decorative arts (Khoo, 1998). Commonly, the Nyonya beadworks were applied to decorative items such as bed runner, cushion cover, table cover, carry wear and shoes, as shown in Figure 46, Figure 47, Figure 48 and Figure 49 below (Tong, 2015).

Figure 44 Beads (Yeoh, 2019).

Figure 45 Beadwork process (Wee, 2015, p.114).

Figure 46 Beadwork on table cover (Yeoh, 2019).

Figure 47 Beadwork on bed runner (Tong, 2015, p.110).

Figure 48 Beadwork on shoes (Tong, 2015, p.143).

Figure 49 Beadwork on purses (Tong, 2015, p.123).

2.7.3 The Porcelain

The Nyonya or Peranakan porcelain is defined as over glaze decorated porcelain with Chinese motifs and colours representing prosperity. This craft was commonly produced at Jingdezhen in the province of Jiangxi in China customizing to the specific design taste of the Peranakan communities of the Straits Settlements. Most of these porcelains were purchased for use during auspicious celebrations such as birthday, ancestor prayer, wedding, Chinese events and anniversary (Kee, 2009). The Nyonya porcelains are known to be more exquisite in design, colours and better quality compared to the ones at the China imperial court. The authentic Peranakan porcelains of Qing Dynasty that are available in Malaysia and Singapore dated at least 150 years. Imperial potters of Jingdezhen who produced for the court also produced for influential merchant communities of the Southeast Asia such as Siam, Malay Peninsula, Singapore and Indonesia, as shown in Figure 50 below (Ho, 2008). The Nyonya porcelains are plain, traditional and functional based on its form, in the varieties of spoon, food jar, teacup, teapot, bowl, pot, vase and incense burner, as shown in Figure 51 and Figure 52 below (Khoo, 1998). At times, European influenced forms were noticeable such as milk jug, teacup, egg stand, sugar jar, wine warmer, soup bowl and soap tray which were specially customised, as shown in Figure 53 below (Ho, 2008).

The term of over glaze has determined the production process of these porcelains that consisted of 2 firings which are required after the application of monochrome glaze on the object body and as well as after the colour enamels application. Commonly, the Peranakan porcelains contain high usage of rose pink enamels which were favoured by them (Kee, 2009). Another

popular Nyonya porcelain with blue and white motif commonly used as kitchenware and sometimes used together along European porcelains is known as Kitchen Qing, as shown in Figure 54 and Figure 55 below. This particular porcelain range was produced in Fujian and Guangdong of China and not intended for decorative purposes, commonly as daily kitchenware due to its hardiness (Khoo, 1998). Wide varieties of ornate auspicious symbolic decorative motifs were usually defined with thin black colour outlines (Ho, 2008). Commonly, the motifs and central format used on the porcelain depicted the art in Chinese painting particularly the order of huaniaohua; flower and bird painting (Kee, 2009). Nevertheless, the decorative motifs were determined by its location, as the Nyonya of the Malay Peninsula were fused with the Malay culture, hence some porcelains were known to contain Islamic elements. The specialty of the Nyonya porcelains is due to its usage of vivid contrasting colours and the opulence of symbolism motifs, reflecting true aesthetic of the Nyonya (Kee, 2009).

Figure 50 Potter of Jingdezhen (Kee, 2009, p.43).

Figure 51 Porcelain spoon (Kee, 2009, p.119).

Figure 52 Porcelain teacup (Kee, 2009, p.159).

Figure 53 European porcelain teacup (Kee, 2009, p.165).

Figure 54 European kitchenware (Wee, 2015, p.156).

Figure 55 Kitchen Qing porcelain kitchenware (Kee, 2009, p.237).

2.7.4 The Ceramic Tiles

The Peranakan homes in the Straits Settlements were built with inspired decorative ideas of the European influences in which some regarded it as Straits Eclectic or Chinese Baroque styled architecture decorated with exquisite tiles, as shown in Figure 56 below (Khoo, 1998). Originally, slabs of granite were used as floor tiles known as Malacca Tiles which were locally mined at adjacent Ubin Island and by mid 19th century onwards, these were replaced with imported designed tiles from the European countries which were in trend during the Victoria era in England, as shown in Figure 57 below. In England, these tiles were extensively used in the architecture of government, churches and luxury residences (National Archives of Singapore, 2015). In the early 20th century, decorative ornate ceramic glazed wall tiles with Art Nouveau flairs were introduced, as shown in Figure 58 below. The tiles were firstly used in the interior walls of homes and after the World War I, the use of tiles were extended to the walls of the façade, as shown in Figure 59 below (National Archives of Singapore, 2015).

The wall tiles were known as glazed ceramic tiles which consisted of Chinese influenced flower and realistic motifs and the floor tiles were known as clay tiles were commonly with geometric designs (National Archives of Singapore, 2015). The wall tiles were also known as Majolica tiles which also imported in large loads from England, Germany and Belgium (National Archives of Singapore, 2015). After World War I, imports of European tiles declined and was replaced with Japanese tiles (The Peranakan Association Singapore, 2015). The richly coloured glazed tiles were produced as single piece tile or in a vertical set that forms into panel which were used for walls of façade, patio, corridor and dresser (The Peranakan Association Singapore, 2015). It is noticeable that these tiles at the Peranakan homes symbolised prosperity by using the number element of 8 such as flower motifs with 8 petals and octagon shaped tiles, also accompanied with the use of contrasting bright colours such as red, green, yellow, pink, turquoise, blue, brown and

purple, as shown in Figure 60 below (National Archives of Singapore, 2015). By early of the 20th century, Japanese produced wide varieties of tiles with Chinese auspicious motifs and geometrical designs (Khoo, 1998).

Figure 56 The Straits eclectic (Khoo, 1998, p.143).

Figure 57 The European clay floor tiles (National Archives of Singapore, 2015, p.57).

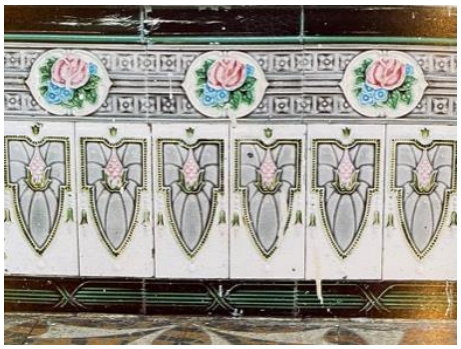

Figure 58 The Art Nouveau glazed ceramic wall tiles (Khoo, 1998, p.158).

Figure 59 Tiles at façade (Knapp, 2012, p.24).

Figure 60 Tiles with element of 8 (Knapp, 2012, p.64).

2.8 The Symbolism of Peranakan Motifs and Colours

In the east, scholars have declared that embroidery, ceramic, painting and sculpture were known artistic development which fulfilled the Chinese principles of qiyun shendong meaning the immersion of evolution through fullness of spirit. To the west, scholars perceived that the foundation of arts consisted of symbol and characteristic representation, creative and association (Cheah, 2010). The significant of the Peranakan decorative arts were its elements of motif and colour as others described the Peranakan material cultures as aesthetically intricate, vibrant and intense. As patriarch of the family, the Baba often preserved the practice of their Chinese ancestors, it is not surprising to see the influences of Chinese characteristics in the Peranakan decorative arts (Cheah, 2010). Commonly, the Baba who were familiar with Chinese symbolic motifs would customised special material cultures for their off springs, families and friends for

auspicious occasions (Ho, 2008). Few symbols originated from Buddhism art does occur although the Peranakan were more inclined towards the teaching of Confucius (Khoo, 1998). The symbolism of Peranakan motifs was adopted from the Chinese, European or Malay represent auspicious meaning (Kee, 2009) which are commonly intended for special occasions (Cheok, 2016). With many cultural influences across the Straits Settlements, the Peranakan communities had borrowed decorative motifs of the Malay culture, modified and applied suitably (Ho, 2008).

The Peranakan decorative arts take forms as functional, uncomplicated and amusing applied from daily to auspicious occasions. In balancing its simple forms, divergence of motifs and colours of flower, fruit, animal and insect were used to occupied entire canvas with refined craftmanship which witnessed through the embroideries, beadworks, porcelains and tiles. There are few uncommon motifs used which were not symbolically defined such as monk fruit, lion, taotie mask and immortals (Ho, 2008). The needle works of Nyonya showed similarity to the Nyonya porcelain which had black border stitches, just like the black outlined motifs as well as the different of colours used; stark contrast colours were applied between the motifs and the background material (Kee, 2009). In the Peranakan communities, material culture surrounds all creation of decorative arts which not only focus on the aesthetic of end result but also on the symbolism, material used and functionality (Khoo, 1998).

2.8.1 Motifs

In the Peranakan decorative arts consisted adaptation of Chinese practice in symmetry order representing the balance of characteristics otherwise portrayed expression of disharmony and imbalance. Neither the Nyonya would create needle works of such nor the Baba could receive customised crafts in asymmetrical designs. The Chinese motifs used are based on the Yin and Yang philosophy principles of balance; Yin represents dark, negative and femininity, dark where else Yang represents bright, positive and masculinity (Mahmood, 2004) such as the most celebrated motifs are the peony and phoenix which represents prosperity and righteousness (Kee, 2009). The most significant of motifs in Peranakan were not about applying the Peony and Phoenix but the ability in manifesting the definition of motifs relations (Ho, 2008). Due to the long historical settlements of the Peranakan in Southeast Asia, it would be inaccurate to claim that all Peranakan motifs used derived from Chinese origin specifically on locally crafted decorative

arts. The similarity of Chinese motifs used in the needle works and porcelain by the Peranakan were based on admiration (Cheah, 2010). As the Straits Settlements located in the tropical ambience, motifs such as flower, fruit, animal, mythical creature and insect were commonly highlighted in decorative arts. With the influence of Malay culture and Islamic religion which opposed to figural motifs, hence focus was cultivated towards nature derived motifs. Figural motifs can be traced on Chinese and European influenced decorative arts (Kee, 2009). The use of mythical motifs in decorative arts was not peculiar the Peranakan, as this is the abstract concept interpretation of figural motifs which were absent (Cheah, 2010).

These motifs can be found on the Peranakan decorative arts such as embroidery, beadwork, porcelain, ceramic, jewellery, furniture, carving and Venetian glass ware (Mahmood, 2004). The most popular Chinese influenced motifs are the peony, chrysanthemum, lotus, peach, finger citron, phoenix, deer, butterflies, peaches and finger citron (Kee, 2009). Locally founded and some Malay motifs such as the 6 or 8 points star of anise, bunga telang, yam, lemongrass, fish and birds which represents prosperity, abundance and fertility were applied together with the Chinese motifs (Khoo, 1998). European influences on motifs were noticeably in modern Peranakan with the use of gladioli, daisy, bluebell, periwinkle, sunflower, rabbit, cat, dog and flamenco (Mahmood, 2004). Although the motifs used by the Peranakan were symbolically auspicious, hence there are different ways to depict the motifs depending on their locations of Malacca, Penang and Singapore, dialects of Hokkien or Cantonese and education level. In particular to this, the Peranakan commonly composed their decorative arts and crafts with abounding of flower, fruit, insect and mythical creature to portray the meaning of abundance, peace and wealth, hence created the Peranakan horror vacui (Cheah, 2010).

2.8.1.1 The Flowers

The motifs of flowers are popularly used, in stylised manner to express strong symbolism and uniqueness which reflected the Chinese, European and Malay charisma. Each flower depicts different meaning and generally the motif of flower reflects femininity in both the context of Chinese and Malay on fertility and abundance (Mahmood, 2004). With the cultural hybridity, variances of motifs were created and applied from needle works to porcelains from popular flowers such as peony, lotus, chrysanthemum, rose (Kee, 2009), orchid, bunga siantan chiah, star

anise, daisy, violet, morning glory, blue bells, sunflower and gladioli (Mahmood, 2004). The blossoming lotus, peony and chrysanthemum are culturally meaningful to the Peranakan as well as the rose which found decorated on upholstery of their European modelled homes imported from Europe defined luxury (Cheah, 2010). Some of the flower motifs were obvious European influenced and have no significance to the Chinese or Malay culture (Mahmood, 2004). Each of these flower motifs relay different definition in positive and auspicious milieu and often balanced with animals or insects in representing the Yin and Yang principles (Ho, 2008).

The peony is known to be the king of flowers representing prosperity and distinction which were greatly admired in rich red or pink. This flower is associated with feminine beauty, romance implication, love, affection and spring; commonly represented in blossoms. In the Peranakan decorative arts, the peony is represented alone or often with the phoenix and also known as the Flowers of the Four Seasons, as shown in Figure 61 below (Kee, 2009). The lotus of the aquatic environment is a religious symbol which represents purity and perfection in the arts of Chinese, religions of Buddhism and Taoism as it took the shape of Buddha meditating. Lotus is known as one of the Eight Treasures of Buddhism which depicts auspiciousness. It also represents summer and maturity as the lotus grew abundance in this season. The lotus also paired along with mandarin ducks and fishes which meant harmony and prosperity, as shown in Figure 62 below (Khoo, 1998). The chrysanthemum is associated with maturity (Mahmood, 2004), friendship, calm, harmony, retreat and thoughtful. It is known to be one of the Four Noble Plants of orchid, plum and bamboo, which also represents autumn. The decorative arts containing Chrysanthemum observed pairing with magpie are customised for the 60th grand birthday of the matriarch or Bibik to represent eternal happiness, as shown in Figure 63 below (Kee, 2009). The rose symbolises youth, newness, sophistication, modernity, international (Cheah, 2010), full bloom femininity and beauty (Mahmood, 2004), which was not well known to the Chinese compared to the European and Peranakan specifically during the early 19th century, as shown in Figure 64 below. The motif of rose appeared quite similar to the peony in few Peranakan needle works in Malacca (Cheah, 2010). The orchid represents exoticness, beauty, modesty, refinement and union love. When presented in abundance, it symbolises wealth and prosperity which commonly applied in needle works and porcelain, as shown in Figure 65 below (Mahmood, 2004). The bunga siantan chiah or also known as Ixora is associated with renewal and abundance which were used

during auspicious occasions such as Chinese New Year and hair combing, as shown in Figure 66 below. The star anise represents auspicious and abundance specifically the ones with 8 points shell petaled flower with seeds, it is commonly used in strong flavoured cuisine of Southeast Asia. This motif is significantly used on ceramic tiles in various colours and stylised forms, as shown in Figure 67 below (The Peranakan Association Singapore, 2015).

Figure 61 Peony motif on porcelain (Kee, 2009, p.62).

Figure 62 Lotus motif on beadwork (Cheah, 2010, p.243).

Figure 63 Chrysanthemum motif on porcelain (Kee, 2009, p.109).

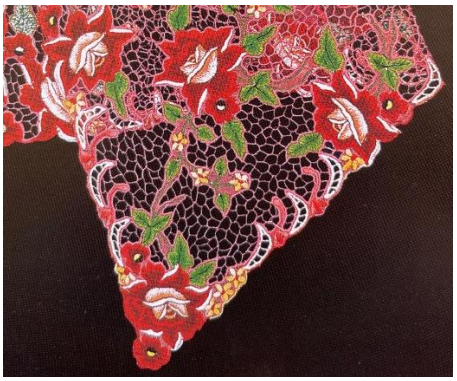

Figure 64 Rose on cut work embroidery (Mahmood, 2004, p.69).

Figure 65 Orchid motif on cut work embroidery (Mahmood, 2004, p.70).

Figure 66 Bunga siantan chiah motifs on tiles
(The Peranakan Association Singapore, 2015, p.179).

Figure 67 Star anise motifs on tiles
(National Archives of Singapore, 2010, p.57).

2.8.1.2 The Fruits and Fungus

The motifs of fruits are commonly appeared in group of few fruits such as peach, finger citron, pomegranate and lingzhi which rarely accompanied by butterfly or bee but maybe by figural motif of the Longevity Immortal (Kee, 2009). The peach, finger citron and pomegranate are known as the Three Abundances with each fruit represents longevity, spiritual and fertility (Ho, 2008). In Chinese language, the peach is called taozi, also the fruit of fairy and originated from China. The peach denotes love, devotion and spring, similar meaning as the peony which early spring or peach blossom marked the best auspicious wedding season for the Chinese, as shown in Figure 68 below. The Peranakan commonly customised porcelains with peach

decorations for 60th birthday celebration as it also represents longevity (Kee, 2009). The peach motif is very popular, commonly seen on decorative arts of the early Peranakan (Cheah, 2010). The finger citron is known as golden citron or Hand of Buddha due to the affinity of the fruit form. It symbolises protection of the divine and prosperity, as shown in Figure 69 below (Kee, 2009).

With the finger citron in rich yellow or recognised as gold to the Chinese were used to decorate the altar and hall together with other auspicious flowers in the ushering of Chinese New Year (Cheah, 2010). The pomegranate with abundance of succulent seeds represents abundance, fertility and noble descendants. It was founded during the Han dynasty and also known as the Chinese apple. Decorative arts with this motif are popular for wedding occasions, as shown in Figure 70 below (Khoo, 1998). The blessed fungus or lingzhi, associated with longevity, eternity and endurance. This fungus is grown at humid temperature environment mainly on trees. In the Peranakan decorative arts, the lingzhi is symbolised by ruyi in the form of geometric which commonly found on the porcelain kamcheng, as shown in Figure 71 below (Kee, 2009).

Figure 68 Peach motif on porcelain (Kee, 2009, p.160).

Figure 69 Finger citron motif on porcelain (Kee, 2009, p.160).

Figure 70 Pomegranate motif on porcelain (Kee, 2009, p.193).

Figure 71 Ruyi motif on porcelain (Kee, 2009, p.173).

2.8.1.3 Animals

The appearance of animals in the Peranakan decorative is not as common as flowers, the popular symbolic animals used are bat, fish, rooster, peacock, crane and mandarin duck (Kee, 2009). The bat is known as the connotation of good fortune, happiness and grace similar to butterfly. It is often seen on needle works, porcelain, bed, fabric and architecture (Knapp, 2012). With a group of 5 bats represents Five Happiness or Five Blessings which symbolises wealth, health, virtuous, longevity and peace, as shown in Figure 72 below. Red bat connotes well wishes of abundance fortune and a pair of bats means double happiness. Bat is commonly accompanied with motifs of Chinese coin, peach and ruyi (Kee, 2009). The depiction of fish is prosperity and abundance, commonly goldfish and carp are used due to their colours, as shown in Figure 73 below. Chinese proverbs regarded to fishes can be found at the altar room (Knapp, 2012).

The rooster signifies yang energy and brings abundance of wealth within the home by greeting the arrival of every daylight. It is commonly placed on roof of the house or on a solid rock, as shown in Figure 74 below (Knapp, 2012). The peacock is adored for its elegance, beauty and pride, represents status and wealth. The motif of peacock spreading its feathers denotes more abundance to arrive and commonly observed on bigger pieces of decorative arts, as shown in Figure 75 below (Cheah, 2010). The graceful crane symbolises longevity and status, the second most used bird motif after the phoenix which represents the patriarch of the family. The crane

commonly appeared on porcelain ware customised for 60th birthday of the matriarch or Bibik and for wedding occasions on longevity blessing, as shown in Figure 76 below (Kee, 2009). The mandarin duck with admirable feathers, absolutely matchless in its species. Commonly appear in a pair and symbolises prosperity, peace, happiness and union bliss. Symbolically significant to both the Chinese and Peranakan, as shown in Figure 77 below (Ho, 2008).

Figure 72 Bat motif on wood carving (Knapp, 2012, p.49).

Figure 73 Fish motif on beadwork embroidery (Cheah, 2010, p.168).

Figure 74 Rooster motif on embroidery (Tong, 2015, p.89).

Figure 75 Peacock motif on porcelain (Kee, 2009, p.56).

Figure 76 Crane motif on porcelain (Kee, 2009, p.56).

Figure 77 Mandarin duck motifs on couched embroidery (Tong, 2015, p.85).

2.8.1.4 The Mystical Animals and Others

The mystical animal motifs commonly applied on Peranakan decorative arts are phoenix, dragon and lion dog (Ho, 2008). The phoenix is called fenghuang in Chinese and is known as the formation of birds of various kind; pheasant's head, parrot's beak, mandarin duck's body, swallow's wings, peacock's tail and crane's legs. The flamboyant phoenix connotes the femininity of yin element, grace and ultimate beauty (Kee, 2009). The phoenix symbolises south and when paired with the peony, she symbolised the Peranakan (Ho, 2008). Commonly, the phoenix is portrayed in 5 colours which represent humanity, sincerity, righteousness, wisdom and propriety, as shown in Figure 78 below (Kee, 2009). The 2nd important in the mythical animal group after the dragon (Ho, 2008). It is believed that the phoenix appears when the time of

harmony, peace and order comes together (Cheah, 2010). The dragon is highest ranked among all Chinese animals and significantly represents masculinity, but not commonly used as it the regalia of the Emperor of China, as shown in Figure 79 below (Ho, 2008). With the advocation of matriarchy in the Peranakan communities, the dragon motif is irrelevant to them, hence decorative arts consisting of dragon motifs are rare. Nevertheless, dragon without horns can be seen along the lion dogs commonly as the decorative vase handles in which represents the matriarch or Bibik (Kee, 2009). The lion dog is known more than a motif specifically in the porcelain ware, a moulded sculpture form attached on the lid of kamcheng or at the sides of vase in crouch or stand manner. It denotes fearlessness, courage, strength and also as the guardian in Buddhism, as shown in Figure 80 below (Kee, 2009).

The insect motifs style a slight portion as secondary subject to flowers and animals in the Peranakan decorative arts (Ho, 2008). Commonly used in the Peranakan decorative arts is the butterfly and occasionally the bee and cricket motif. The butterfly symbolises femininity, beauty, happiness, hope, dream and love, as shown in Figure 81 below. The butterfly appeared in 2 or in group of 4 in decorative arts (Cheah, 2010). Associated with union bliss when paired with flowers, commonly observed in embroidery, beadwork and porcelain (Kee, 2009). Gifts of these motifs represent auspicious and hope of longevity are ideal for the matriarch or Bibik (Cheah, 2010). The bee is quite popular among the Peranakan collection as it called feng which sounded like Chinese vocal of abundance of wealth (Kee, 2009). The cricket is the symbol of auspicious, happiness, courage and denotes the season of spring and summer, kept for ability to sing and as game pet in customised cricket box. In the Peranakan decorative arts, cricket is used to accompany the Flowers of Four Seasons, as shown in Figure 82 below. (Cheah, 2010). Geometric motif such as the Chinese coin similarly to the ruyi motif is commonly used specifically on porcelain vase, drum stool and cricket box. The Chinese coin represents immortality, many folds of wealth and continuous prosperity, as shown in Figure 83 below. The coin during the Qing dynasty bore the etched Chinese characters of Tien Xia Tai Ping meaning Peace on Earth (Kee, 2009).

Figure 78 Phoenix motif on couched embroidery (Tong, 2015, p.80).

Figure 79 Dragon motif on cut work embroidery (Mahmood, 2004, p.77).

Figure 80 Lion dog motif on porcelain (Kee, 2009, p.173).

Figure 81 Butterfly motifs on porcelain (Kee, 2009, p.169).

Figure 82 Cricket motifs on porcelain (Ho, 2008, p.62).

Figure 83 Chinese coin motif on porcelain (Kee, 2009, p.232).

2.8.2 The Colours

During the 19th century, coloured translucent organdie fabrics used in the Peranakan blouse of kebaya sulam were brought in from Europe. By coincident, the Peranakan of Indonesia created and introduced the vibrant and contrasting coloured Pekalongan Batik to the Malay Peninsula and India. The Pekalongan batik is also known as Chinese batik in which created with artificial pigments from Europe. The colour palettes of the Nyonya porcelain wares have great influence on the needle works and batik as the both applications have distinct affinity to the appearance of porcelain wares from the black outlines to the colour of yarns (Kee, 2009). All these mediums consist the use of similar colours, motifs and horror vacui; most probably the Peranakan disliked the concept of emptiness (Ho, 2008).

Similar to the motifs, the Peranakan favours vivid colours were boldly applied on decorative arts such as white, rose pink, coral red, yellow, green, blue and brown, as shown in Figure 84 to Figure 97 below. Dark colours or black are recognised as mourning colours, these were not favoured as Peranakan decorative arts are intended to symbolize positivity (Cheah, 2010). Although colours play essential characters in the Peranakan decorative arts, certain Nyonya practiced age based colour preference commonly on attires with pastel colours for young Nyonya, vibrant colours are for the married Nyonya and subdued colours are reserved for the matriarch or Bibik (Mahmood, 2004).

2.8.2.1 White

The use of white in porcelain of the Peranakan culture does not represented any symbolism but as a background colour to soften the use of vibrant colours of motifs. It is known that the colour of white was a breakthrough in porcelain wares during the Qing dynasty which derived from mixture of arsenic and lead oxide (Kee, 2009). Hence, many large dining sets of Nyonya porcelains were customised in white with decorations of flower motifs denotes more Chinese influence. With white background, less clusters are observed (Ho, 2008).

Figure 84 White porcelain dessert bowl (Kee, 2009, p.101).

Figure 85 White porcelain kamcheng (Kee, 2009, p.169).

2.8.2.2 Rose Pink

The rose pink or also known as famille rose, it was brought in by the European solely for the use of copper colouring before it was applied on porcelain during the Qing dynasty (Ho, 2008) which was coincidently popular during Rococo in Europe (Gotheborg, 1998). Produced from colloidal gold chloride and commonly used as background colour together with green, much adored by the Peranakan communities and be found in several tones (Kee, 2009). Towards the

end of the Qing dynasty, the use of famille rose has reached its peak, hence replaced the green or famille verte. More motifs were applied on the rose pink background, creating more elaborate in design. Imported colours of these are known as falangcai which in Chinese, falang means foreign and cai means colour (Gotheborg, 1998). The rose pink symbolises auspicious, femininity, purity, happiness, youth and eternity, often observed during union celebrations of the Peranakan communities. The rose pink used on the attire are worn by unwed Nyonya (Kee, 2009).

Figure 86 Rose pink porcelain Oriental teapot (Kee, 2009, p.126).

Figure 87 Rose pink porcelain teacup (Kee, 2009, p.74).

2.8.2.3 Green

The background of green or famille verte in porcelain expresses season of spring and youth. There are various tones of green such as apple green, emerald green, jade green and turquoise green created on purpose by the potters of Jingdezhen. The green is known as the most extraordinary colour in Nyonya porcelains and commonly applied along with rose pink (Kee, 2009). The use of green along with rose pink were prevalent in the Peranakan decorative arts. Their adoration on this colour went to the extent of the exterior of their houses were painted in

green in which some believes that it could be related to the green and rose pink used in the British endorsed Peranakan Coat of Arms (Ho, 2008).

Figure 88 Green porcelain tea tray (Kee, 2009, p.148).

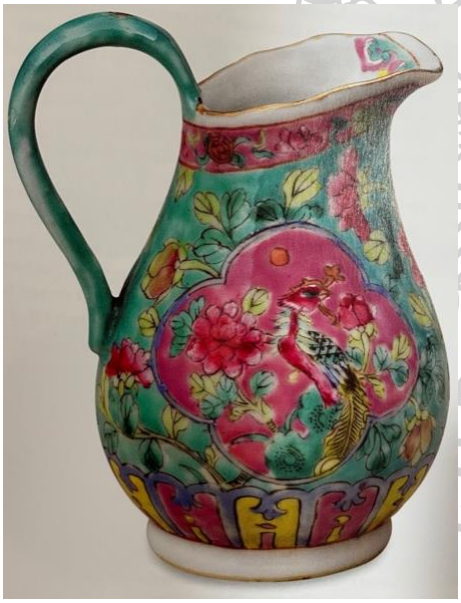

Figure 89 Green porcelain European milk jug (Kee, 2009, p.167).

2.8.2.4 Yellow

The use of full yellow as background colour is extremely rare in Nyonya porcelains as yellow is the reserved colour imperial wares which related to the Emperor of China, potters of Jingdezhen were reluctant to produce such coloured wares to avoid punishments. Commonly, the yellow is applied only at the centre of the porcelain framed with different coloured border (Kee, 2009). The colour of yellow was not allowed to be used by the public which the Dragon Coat

used by the Kapitan China during the British was only in red, blue and green. The motif of the embroidered dragon was also different with those used in the imperial court of China (Ho, 2008). In the Peranakan communities, yellow expresses auspicious and honour, commonly used on celebrations such as 60th birthday and Chinese New Year (Kee, 2009).

Figure 90 Yellow porcelain dining plate (Kee, 2009, p.78).

Figure 91 Yellow porcelain drum stool (Kee, 2009, p.233).

2.8.2.5 Coral Red

The coral red is similar to yellow, rarely available and also reserved for imperial use. Coral red is created with the use of iron oxides, appeared in different tones such as vibrant red, apricot red, vermilion and orange. Commonly, the coral red is accompanied with white in porcelains (Kee, 2009). Coral red expresses auspicious and prosperous, some of the Nyonya porcelains of this colour are highly prized collections (Ho, 2008).

Figure 92 Coral red porcelain European soap tray (Kee, 2009, p.38).

Figure 93 Coral red porcelain vase (Kee, 2009, p.79).

2.8.2.6 Blue

The blue Nyonya porcelains are more uncommon than the yellow porcelains, perhaps because its similarity to black which is known as the colour of mourning and at some circumstances, blue black porcelains were seen used at religious ceremonies (Ho, 2008). Blue porcelains appeared in few variants of tones from Wedgwood jasper blue to blue black which derived from aluminium oxide. The light blue connotes happiness (Ho, 2008) and youth was

much acceptable, blue Nyonya porcelains often paired with bright yellow and pink coloured flowers and butterflies (Kee, 2009).

Figure 94 Blue porcelain kamcheng (Kee, 2009, p.80

Figure 95 Blue porcelain egg stand (Ho, 2008, p.27).

2.8.2.7 Brown

The brown or brownish green porcelains are also uncommon but could be seen on early 20th century Malacca and Singapore Nyonya porcelain wares, but not Penang (Kee, 2009). This colour was not favoured by the Peranakan communities and the production was not equally refined as the porcelain of other colours (Ho, 2008).

Figure 96 Brown porcelain kamcheng (Kee, 2009, p.183).

Figure 97 Brown porcelain katmau jar (Kee, 2009, p.188).

2.9 Summary

The periodic Peranakan era was when the wealth of their communities measured by belongings they presented alongside with their decorative arts and crafts in which they seized every opportunity in. The Peranakan communities settled at the central of the Straits Settlements in the Malay Peninsula as well as Indonesia, situated at the junctions of the Eastern and Western trades, the Peranakan communities submerged in the melting pot of nationalities, races and

cultures. They were largely formed by not predominantly only by the trade ambience but also the Chinese, European and Malay characteristics which honed their tastes and preference to a unique style and extravagant to themselves. Although, the wealth and status were the demeanours of the Baba, the best finery of luxury decorative arts were reserved for the Nyonya whom attributed pricelessly. The much treasured luxurious European threads and glass beads ended up in the needlework basket of the Nyonya have indeed bring their legacy forward as the pride and appreciation of the Southeast Asia.

Trained young Nyonya by their mothers or grandmothers from tender age went through painstaking efforts in the creation of embroidery crafts of silk, gold and silver threads as well as going through countless of very small glass beads in beading, merely not just with the decoration purpose but reflecting the openness in acceptance. Their talents on ornately detailed embroidery and beading works were highly decorated with vividness and elaboration which carried the auspicious expression in the motifs and colours shared from the grandeur Chinese porcelain wares. It was common to see how past embroiderers mimicked motifs and colours from other culture and media including textiles, porcelains and ceramics. Their crafting of decorative arts may be recognised as horror vacui with entirely filled of ornateness, vividness and flamboyance aspects but the detailed motifs and colours are the significance in defining the meaning each of the Nyonya creation. The motifs of flowers, animals, mythical animals, insects and geometric shapes of the Bunga Siantan Chiah, Star Anise, ruyi and Chinese coin were denoted with individual meanings, commonly positive and favourable connotations such as auspicious, abundance, prosperity and longevity. In complimenting the motif, bright colours of rose pink, yellow, coral red, green and blue were commonly used to enhance the love of the Nyonya on vibrant aesthetic. In addition, it is acknowledged that the Nyonya were the main contributors on the creation of authentic and true Peranakan decorative arts through adaptation and reformation of culture in restyling to the essence of the Peranakan. Ultimately, the imbrication of the Peranakan decorative arts style varies from locations of the Peranakan communities although they shared the same identity. Today, these Peranakan heritage antiques or kohtong in Chinese are considered as exclusive collectables and not in any means to be reproduced, at least not to its original characteristics.

Part 3

2.10 The Oil Palm

In the historical context, the oil palm existed primitively in Western Africa even before the existence of proper agriculture structure (MPOC, 2017). The early oil palm plant species introduced Malaysia is known as Elaes Guineensis Jacq originated from Western Africa and Egypt that were used 5 millennia ago as primary source of daily consumption, as shown in Figure 98 below. The palm oil is also known as the oldest commodities in trade. Although palm oil is pervasively available in Western Africa, it was the British who took the opportunity to market it internationally significantly during the growth of export demand in the British Industrial Revolution era (The Oil Palm Organization, 2018). The Portuguese monopolized in 1434 and 150 years later, the British and Dutch joined in (MPOC, 2017). The production of palm oil was highly demanded due to its commercial value from consumable oil, lubricants to soap, therefore the demand drove the Europeans to expand and develop the oil palm plantations in Western Africa, Sub-Saharan Africa and followed by South East Asia, as shown in Figure 99 below (The Oil Palm Organization, 2018).

In 1870, the oil palm was offered to Malaya by the British, approximately during similar period of the rubber crop which originated from the Amazon Forest of Brazil. Back then, not much interest in the oil palm commercialization as rubber was more known due to the upswing of global automotive market. The anecdote of the oil palm journey from planting to becoming an economic agriculture is credited to French businessman, Henri Fauconnier. He left his teaching career in England with great agriculture interest in Asia, in which he arrived in Malaya and was employed at Jalan Akob Estate which situated in Kapar, Selangor. In 1917, Henri Fauconnier planted the oil palm vastly in his Tennamaram Estate, Rantau Panjang, Selangor in which marks the beginning of the commercial plantations of oil palm and production of palm oil sector in Malaysia. With the effort of agriculture plans by the government, the rapid growing oil palm industry was used in 1960s to substitute the nation's economy dependency on tin and rubber (MPOC, 2017). Hence with the growing demand for oil palm, many of the rubber plantations belong to the British and Chinese owners in the 20th century made change to suit the commercial needs such as Hasrrison & Crosfield, Sime Darby & Co., Guthrie & Co, Malay Peninsula Rubber

Concession Co. Ltd., Thomas Barlow & Partner, E. Boustead & Co and Boustead & Brothers, Duff Development Co. Ltd. Shortly within few years after the Independence of Malaya in 1957, most of the British owners sold their plantations in total of 131,486 acres to the Chinese, Malay and national companies (Rajarao, 2018).

Currently, there are 4.49 million hectares of oil palm plantation, making Malaysia as one of the biggest exporters and producers globally on palm oil products (MPOC, 2016). The oil palm tree can grow as tall as 60 feet or even taller. The trunks of mature and young trees are draped with fronds making them rugged and more mature trees are the opposite as fronds are usually decayed or pruned. The tree contains both the female and male flowering organs in the same plant. The oil palm tree produces fruits through flowering that takes 5 to 6 months. Its fruits are knitted tightly in a bunch at the top of the tree where the fronds grow. In the bunch, it contains between 1000 to 3000 of egg shaped fruits weighing approximately
10 to 25 kilograms. The fruit kernel contains oil that has the same chemical contents with coconut oil and the pulp also known as mesocarp contains the palm oil (Verheye, n.d.). The unripe fruit is deep purple towards black in colour and turns red when mature. In Malaysia currently, the hybrid sub species known as Tenera are being introduced as this variety able to produce higher quantity of fruits, as shown in Figure 100 below. Tenera can produce up to 50 tons of crude palm oil per hectare yearly. The tree will begin to bear fruits after 30 months of planting and constantly productive up to 30 years, oil palm is known as the most efficient plant in oil production (MPOC, 2017). Mature fruit bunches that weighs 5.8 tonnes can produce about one tonne of raw palm oil. In the process of raw palm oil extraction, the empty fruit bunches are removed from the fruits (Singh, Sulaiman, Hashim, Leh & Singh, 2013).

Figure 98 Oil palm (Ooi, 2017).

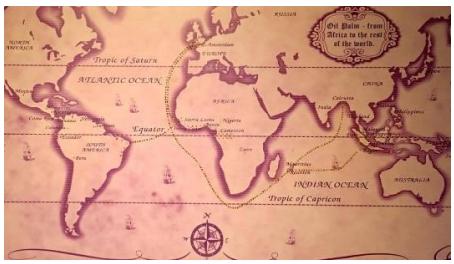

Figure 99 Oil palm journey from Africa to the world (MPOB, 2017).

Figure 100 Oil palm fruits (Yeoh, 2015).

2.10.1 The Plantations and Mills

The oil palm industry has contributed vastly and consistently to Malaysia in terms of agriculture and commercial, the palm oil industry also provided vast contribution of environmental issues. The collected portions of empty fruit bunches (EFB), oil palm trunks (OPT), oil palm fronds (OPF) are found commonly at plantations and mills for management and processing (Abdullah & Sulaiman, 2013). Unfortunately, these fibres at the plantations and mills were not fully utilised in the commercial context, commonly disposed either through open burning or into the waste ponds (Basiron, 2007). With the current practice, the potential usages of resources are underutilised. In 2008, the Malaysia government worked together with Malaysia Palm Oil Council (MPOC) to establish Roundtable for Sustainable Palm Oil (RSPO) with working partners of the oil palm industry on the implementation of initiatives such as guidelines and innovative development (Abdullah & Sulaiman, 2013).

2.10.1.1 The Plantations

In the global palm oil industry, Malaysia is known to be one of the major contributors and traders. The agriculture segment of crop planting started with rubber in 1896 and followed by oil palm in 1917 (Basiron, 2007). This is marked by the earliest development of commercial oil

palm plantation at Tennamaran, Selangor (Abdullah & Sulaiman, 2013). As being part of the tropical areas, the climate of Malaysia is suitable for the planting of oil palm as the temperature is ideal, varying from 25ºc to 35ºc and with consistent rain measuring at 200cm yearly. The oil palm plantations only started to flourish not until 1967 where the palm oil industry went through the rapid commercial growth where it has changed the strategy of the country's economy and agriculture industry, as shown in Figure 101 below. The demand for palm oil indeed encouraged extensive scope of ventures in the palm oil planting. In the 70's, the production of palm oil has escalated highly due to the increased demand of processed palm oil in China, India and the Middle Eastern countries. This industry is also known to provide the largest employment opportunities in the country (Basiron, 2007).

The agriculture of this industry is deemed important as it has contributed generously to the commercial areas of the country such as Gross Domestic Product (GDP) of Malaysia in which ranked the 4th highest revenue provider and as the 2020 National Key Economic Areas (Ismail, Ahmad & Sharudin, 2015). Currently, with limited room for the expansion of oil palm plantations in Peninsula Malaysia, the growth of this industry will be expanded to East Malaysia such as Sarawak and Sabah (Husin, Ramli, Mokhtar, Wan Hassan, Hassan, Mamat & Aziz, 2002). In Malaysia, currently there are more that 5 million hectares of oil palm plantations, as shown in Figure 102 below (Zafar, 2014).

Figure 101 Oil palm plantation (Yeoh, 2017).

Figure 102 Oil palm plantation in Malaysia (Miller, 2012).

2.10.1.2 The Mills

The first oil palm mill in Malaysia was set up in Tennamaram Estate, Selangor belonging to Henri Fauconnier which is still working until today (MPOC, 2017). The palm oil industry in Malaysia began in the oil palm plantations kept by agriculture organizations which often also owned oil mills that operates on the oil production from the fresh fruit bunches (FFB), as shown in Figure 103 below. The smaller scale producers also provide FFB which are marketed to traders (Basiron, 2007).

Currently in Malaysia, there are 426 oil palm mills in total with yearly crude palm oil production of 24.97 million tons, dominating the global commercial share by 46 percent (Abdullah, Wan Mahmood, Mohamad Fauadi, Ab Rahman & Ahmad, 2015). The mills are massive operating plants with automated structured machines consisting of containers, conveyer belts, vessels, drains, boilers, and turbines that able to perform all steps to produce palm oil based on global requirements, as shown in Figure 104 below. At the mills, fresh fruit bunch (FFB) are processed mechanically for palm oil extraction and usually able to handle approximately 60 to 100 tons and producing 60 to 100 millilitres in an hour. The concept of these mills remains the same as it first developed in the 50's, as shown in Figure 104 below. Normally, a regular FFB consists approximately 1000 to 3000 fruits which weighs in between 20 to 30 kilograms (Siew, 2017). According to data provided by Malaysia Palm Oil Board (2017) that in 2016, the total of FFB yielded was 15.91 tons per hectare.

The processes conducted at the mills are such as sterilization, stripping, digestion and pressing, clarification, purification, drying and storage. There are two main products that produced at the mills such as palm oil and discarded organic fibres. The palm oil is refined into two varieties of oil known as lauric oil from the kernel of the palm and crude palm oil from the high fibre mesocarp. In the oil palm mills, the oil from the fresh fruit bunch (FFB) are extracted

into palm kernel and raw palm oil thus creating discarded fibres such as EFB (Nor & Rostam, 2011).

Figure 103 Fresh fruit bunches (Saidi, 2014).

Figure 104 Palm oil mill (Teo, 2016).

Figure 105 Oil production using fresh fruit bunches (Aisyah, 2020).

2.10.2 The Oil Palm Waste

The primary organic solid waste that produced by this industry are known as empty fruit bunches (EFB), oil palm trunks (OPT) and oil palm fronds (OPF) which have created considerable waste management concern. As based on the conventional circumstances, this waste is managed the same way as domestic waste unless there is commercial value attachment to it (Abdullah & Sulaiman, 2013). In 2009, Malaysia oil palm industry produced 17.9 million tons of palm oil, thus it also has generated 65.5 million tons of organic waste with 30 million tons of it consists of oil palm fibre (The Star, 2018). In 2020, the availability of organic waste has increased

approximately 85 to 110 million tonnes (The Star, 2015). As according to Geng (2013) that the waste produced in the oil palm industry is seven times higher in comparison to the timber industry. Although the oil palm industry has been providing intensively but the post production of the mills has contributed to the degradation of the environment with producing primarily high amount of fibre based solid waste other than liquid waste (Abdullah & Sulaiman, 2013).

The complete decomposition test conducted for oil palm waste such as fruit bunches in open areas will take about one to two years and two to three years for trunks, thus these wastes should be managed with the best solution that can be either for recycling or industry usage (Teh, 2016). The palm oil is only 10 percent extraction of the oil palm and the balance is considered waste which frequently causes pollution (Ramli, Shaler & Jamaludin, 2002). The milling industry needs to move into more sustainable direction leading to waste less or turning the waste into products that can contribute commercially (Nor & Rostam, 2011). The waste of oil palm industry is a dependable source due to its abundance, accessible and sufficient (Abdullah & Sulaiman, 2013). Thus, being one of the largest palm oil contributor, Malaysia has yearly produced 3 million tonnes of this waste (Guo & Lua, 2000). The milling process of palm oil can generate many types of waste during the production of palm oil such as organic waste, effluent and gases (Nor & Rostam, 2011). The waste management is facing a great challenge with the palm oil industry. The mills are generating large amount of organic waste from fibres such as EFB which can be used in making products that have commercial value.

Most of these wastes are disposed either through open burning or into the waste ponds that contribute to climate change by releasing gases such as methane and carbon dioxide (Zafar, 2014). As according to Bas Melssen; Executive Vice-President of Agensi Innovasi Malaysia that previously many palm oil mills used boilers to discard high amount of palm oil waste as they were unsure of the potential gain and usage of the waste (The Star, 2014). Managing palm oil waste has direct connection with the industry where waste can be utilized. It is important to conduct palming in a sustainable way to avoid the exploitation of human and the environment (Ramos, 2014). The waste produced by the agriculture industry such as oil palm is considered as natural fibre; natural fibre derives from leaves, stalks and grasses or animals. It is sustainable, available in abundance and more durable than synthetic fibres, thus earning its significance in the composite segment of the commercial industry. Few terms are used to described this material in

the composite industry such as plant fibres deriving from non-wood, wood based or lignocellulosic fibres. This demand for this material is growing rapidly as a replacement for conventional materials which are harmful for the environment (Tan, Yern, Sin, Abdullah & Seng, 2015). Fibre of oil palm waste is a biodegradable and non-toxic material which derived from EFB after the palm oil extraction process, thus the material is pure, contains no insecticide or harmful (Abdullah & Sulaiman, 2013).

2.10.2.1 The Empty Fruit Bunches (EFB)

The oil palm grows well in Malaysia as the climate is suitable, therefore the palm oil agriculture segment can produce lucratively for the economy. Each hectare of plantation can generate up to 10 times more than other oil producing crops (Nazirah, Ridzuan, Hafis, Mohamed & Azduwin, 2013). Malaysia now as the producer of palm oil for the global market, generates approximately 7.3 million tons of EFB yearly. The EFB are discarded after the process of palm oil extraction, as shown in Figure 106 and Figure 107 below (Dayana, Roshanida, Rosli, Zahrah, Mohd Anuar & Nazrul Adha, 2011). The palm oil is only 10 percent extraction of the oil palm and the balance parts such as EFB are discarded (Ramli, Shaler & Jamaludin, 2002).

The extraction of palm oil process is conducted at oil palm mills, high amount of waste of EFB are produced that requires proper management (Singh, Sulaiman, Hashim, Leh & Singh, 2013). Approximately 60 percent of EFB produced at the mills is used for burning to obtain energy and the balance of 40 percent is further used at refinery (Reeb, Hays, Venditti, Gonzalez & Kelley, 2014). The complete decomposition test conducted for EFB in open environment will take approximately 1 to 2 years and (Teh, 2016). The EFB are available in abundance are entirely organic and fibre rich containing no harmful preservatives, synthetic substances or unfamiliar ingredients (Zahar, 2015). By developing especially EFB into value added products can contribute towards an advanced commercial paradigm (Nazir, Yussof & Wahjoedi, 2011).

Figure 106 Fresh oil palm fruit (Sarkar, 2020).

Figure 107 Empty fruit bunches (Yeoh, 2017).

2.10.3 The Palm Paper

Paper and pulp are produced from organic sources consisting of cellulosic fibres such as agriculture and wood where most of the cellulosic fibres used are obtained from non-wood sources (Bajpai, 2012). In the oil palm industry, unutilised EFB have the potential in substituting raw fibre in papermaking and pulp as the content of its chemical properties are suitable in comparison with other raw fibres (Singh, Sulaiman, Hashim, Leh & Singh, 2013), as shown in Figure 108 below. The EFB in comparison to many other organics from agriculture such as wheat straw, rice straw, olive leaves, cotton stalks, sugarcane bagasse and sunflower stalks shows that EFB is the suitable option for pulp production (Ferrer, Vega, Ligero & Rodriguez, 2011). The EFB is also compared to other parts of the oil palm such as the oil palm fronds (OPF) and oil palm trunks (OPT), the result shows that EFB containing low lignin, high fibre and moderate level of starch making it the most suitable for papermaking and pulping (Rosnah, Ghazali, Wan Rosli & Dermawan, 2010). The EFB has also been tested and found compatible physical and chemical characteristics with trembling aspen (Singh, Sulaiman, Hashim, Leh & Singh, 2013). Trembling aspen is from the poplar tree category that can be found in abundance in North America. Its wood is use in making hardboard, plywood, containers and pallets. The original use

of this wood is to produce paper and pulp commercial products (Balatinecz, Kretschmann & Leclercq 2001).

The manufacturing of pulp and paper begins with pulping that requires preparation of raw fibre such as bark removal for wood, core removal for non-wood and cutting. Pulp derives from cellulosic source requires mechanical and chemical processes (Bajpai, 2012). Advance technologies are available for EFB pulp and paper production such as chemi-thermochemical (CTMP) and thermos-mechanical (TMP). The EFB pulp produced through CTMP has low brilliance but high in strength in comparison to soft wood pulp using the same technology. Pulp of this quality is utilized as paper for wrapping, newspaper and premium paper for print, as shown in Figure 109 below (MPOB, 2017).

The yearly global demand for paperboard and paper is approximately 300 million tonnes and expected to reach 531 million tonnes in 2020 (Wan Daud & Law, 2011). In the Malaysia market, most products of paper are imported except for tissue paper. With this advancement, it enables the reduction on import of paper and pulp products as 1 tonne of pulp can be produced from 5 tonnes of EFB. The EFB shows the most ideal profit prospects in providing for the paper and pulp industry (Singh, Sulaiman, Hashim, Leh & Singh, 2013). In Sabah, the Borneo Advanced Sdn. Bhd. and Forest Research Institute of Malaysia (FRIM) have developed the world's first mill in 2003 to produce paper and pulp mill using EFB (Wan Daud & Law, 2011).

Figure 108 *Shredded EFB to pulp (Gemco Energy, 2021).*

Figure 109 Palm paper (Ting, 2013).

2.10.4 Commercial Use

The utilization of palm paper can narrow the gap of great worries of insufficient timber resources, much effort has been spent on researching on new development (Amico, 2010). Palm paper derived from EFB is biodegradable and non-toxic, is pure, contains no insecticide or harmful (Abdullah & Sulaiman, 2013). The resources of EFB offer promising potentials by turning it into commercial value-added products (Abdullah, Nazir & Wahjoedi, 2011). The EFB can be used to create many varieties of products as the supply is consistent, poses high functionality and adaptability characteristics (Abdullah & Sulaiman, 2013). Some the commercial products using palm paper are as shown in Figure 110, Figure 111 and Figure 112 below.

Figure 110 Sustain soap (Monsa, 2012, p.74-75).

Figure 111 Earth cycle trays (Material District, 2016).

Figure 112 Palm republic stationeries (Yeoh, 2019).

2.11 Summary

Today, the palm oil industry of Malaysia has reached its milestone of more than 100 years, which has flourished consistently since then. The oil palm industry of Malaysia was pioneered in 1917 by French businessman, Henri Fauconnier at his Tennamaram Estate, Rantau Panjang, Selangor in which marks the beginning of the commercial plantations of oil palm and production of palm oil sector in Malaysia. The oil palm plantations were commonly conversion from rubber estates which were own by the British and Chinese up to the Independence of Malaya, which were sold to the Chinese, Malay and the government of Malaya. Up to 2016, there are 5,737,985 hectares of plantation and 15.91 tons of FFB were yielded and processed in the mills, making Malaysia as one of the biggest exporters and producers globally on palm oil. Further to this, Malaysia has become the first member of RSPO which has also advanced the oil palm industry specifically on wide range of commercial products from functional to consumable products.

As the palm oil is only 10 percent extraction of the oil palm, the leftover of organic fibres had wasted away without contributing much values. Hence, as stepping into the new frontier, the industry has taken a step towards the greener paradigm; a move forward by turning the fibre into value-added products that can contribute to the society, environment and economy of the nation. This is possible as the fibre of EFB consists of suitable properties, biodegradable, safe, clean and pesticide free which have been successfully developed into pulp base products. With modern development in the technology of pulp processing, many other plant fibres are used in papermaking such as bamboo, sugarcane, hemp, flax and jute. Nevertheless, these fibres have been applied into production of premium quality fashion and upholstery textiles as these materials are strong, less in weight, natural and renewable. Conclusively, the palm paper has been applied

on commercial products such as wrapper, container and writing pad which commonly basic without much design approaches.

Part 4

2.12 The Underpinning Theory

The Peranakan known as distinct advocate of the British has produced a significant pattern. It is realised that due to their close affiliation, the Peranakan has adopted much from the British and created resemblance in many aspects in their way of life. Therefore, the rationale that can explain such is by applying the theory of mimesis. The aesthetic mainstream of the Peranakan determined by mimesis is clearly shown in their architecture, furniture, decorative items, porcelains, jewelleries and attires. The words such as mimicry, mimetic originated from the mimesis term originated from the archaic Greek meaning striving to mimic, resemble or follow in the manners of verbal, function, tradition, character, aesthetic and artistic depiction; mainly used in 2 contexts that of nature and artistic mimics (Puetz, 2002). Plato as one of the greatest Western philosopher (Kraut, 2017) has mentioned that mimesis debates in the context of cultural in which similar to the interpretation of Aristotle on the contrast between authentic and borrowed, animal and human, and nature and craft (Rutgers School of Arts & Sciences, 2020). In the Western world, mimesis often occurs on the aesthetic ground; creation of decorative item as similar as possible to subject of preference but mimesis is more than mimic and depiction however also on ideology (Antherieu-Yagbasan, 2018). The theory of mimesis is applicable in recognition to observe oneself as the preferred other as a recognition of association with intellectual likeness which indicated since archaic days in correlation study of reality and art (Baktir, 2003). According to anthropologist Michael Taussig that “The wonder of mimesis lies in the copy drawing on the character and power of the original, to the point whereby the representation may even assume that the character and that power” (Taussig, 1993).

From the reviewed literatures of this research on the Peranakan culture in decorative arts, it is clearly seen that the Peranakan has borrowed many foreign elements of arts and crafts from other cultures in direct and stylised approaches. The early Peranakan decorative arts of fabric, porcelain and ceramic inclined towards the Chinese influenced motifs of flowers, animals and

mythical animals, which also included the Nyonya favoured auspicious colours of rose pink, red, yellow and green which were produced by potters in China for originality assurance. From the Malay counterpart, borrowed motif such as the orchid, bunga siantan chiah and star anise were applied. Such doings were not surprising as the strong rooted Baba believes in Taoism, Buddhism and teaching of Confucius. Further to that, most Baba came from small communities of the Peranakan of the Straits Settlements of Malacca at that time were educated in Chinese system locally and later were sent to China. The use of motifs from the Malay culture attributed to the Nyonya as they are known as local women whom the Baba married and to some extent possibly the women of local Malay. In the later Peranakan specifically during the growth of the British and the expansion of the Straits Settlements, changes were seen as more of the Peranakan received European education, conversion to Christianity and lived lifestyle the western ways. The Baba imitated mainly the British during the colonialism period on their homes, languages, hobbies, attires, plantations, commercial trades and even decorative arts. This came with the adaptation of foreign elements from the European such as applying the forms of western wares and the borrowing of and fabric of colourful organza and motifs such as rose, gladioli, daisy, bluebell, periwinkle, sunflower, rabbit, cat, dog and flamenco. The application of Wedgewood light blue from the west was accepted although the colour of blue generally denotes as the funeral colour to both the Chinese and Peranakan.

By defining the above, it is determined that the theory of mimesis is suitable to describe the approach of the Peranakan in using the borrowed motifs and colours from other cultures such as the Chinese, European and Malay to create their own Peranakan decorative arts. The used of European elements is not peculiar especially at that time of colonialism where the Peranakan looked up to the British as foreign power on wealth and status. Hence, by sharing the same style of the British, had positioned the Peranakan specifically the Baba at similar stature such as the appointment of the Kapitan China. The approach of mimicking of colonial ideas were possible, not prohibited in the Malay Peninsula during British colonialism back then unlike the Dutch endorsed 1872 rule in disallowing the locals of Java in borrowing any colonial owned subjects.

2.13 Conclusion

The Peranakan was the centuries old culture since 600 BCE, rooted majority from the Fujian province in China. They were travelling merchants whom docked at prominent ports of Malay Peninsula and Indonesia for commercial trades in the Southeast Asia. In their seafaring journeys, they were not accompanied by their wives who remained in their homeland. With the seasonal midyear monsoon, they were forced to stationed in the earliest port of Malacca in Malay Peninsula where they took local women as their wives whom able to care for their trades during their absence. Their offspring of were known as the Peranakan, with the male known as Baba and female as Nyonya. The early generations of Baba were commonly schooled in Chinese and the later ones were European educated. Majority of the young Baba were trained and managed trades through international connections through association of relationships just as their fathers. The young Nyonya were mostly inclined to their mothers who taught them the aspects of domestic chores such as needle works and cooking started from young. Only the Nyonya of newer generations were schooled and liberated. The Peranakan communities were awarded special status as the King's Chinese, provided with foreign education and commercial trade opportunities. Commonly the Baba were in favourable communication with the British as they shared the same stature, even lifestyles. With the retreat of British after World War II, Great Depression, Nanyang Depression and political change marked the end of the Peranakan era in the Malay Peninsula. Most of the Peranakan began to assimilated into common Chinese communities, known as the Sinkheh. With this, the Chinese community expanded into the many trades and grew successful global organizations such as the IOI Group, Genting Group, Sunway Group, YTL Group and Berjaya Group. Today, the modern generations of both the Peranakan and Sinkheh continues to rise domestically and internationally in trades as well as professional fields.

At the height of the Peranakan era, Baba made their fortunes from their international trades of maritime freights, spice trades, mined tins and plantations. This obtained wealth allowed the Peranakan lived their lives in luxuriant, flamboyant and elaborate lifestyles with expansive villas, imported furniture, priceless collectables, elaborated ornaments and exquisite decorative arts. This was a period where wealth of the Peranakan was portrayed by what they owned including their arts and crafts. None other than the Nyonya's talent could uphold the pride of their families with needle works of embroidery and beading could produce such mastery crafts which

they were trained from young realising that such promised blessed marriages. The decorative arts which developed by the Nyonya uniquely mirrored the Chinese Qing Dynasty, Malay and European styles. They have the openness in borrowing favoured meaningful elements from other cultures which denoted auspicious expression in the motifs and colours shared from the Chinese, European and Malay. The motifs of flowers, animals, insects and mythical imaginaries also the bright colour pallets of rose pink, yellow, coral red, green and blue symbolises auspicious, abundance, prosperity and longevity. Nevertheless, all these represents not only the authentic, true and aesthetic of the Peranakan art but also the life journey of the Nyonya.

Although the Peranakan took a big leap in assimilating themselves into the common Chinese communities, their legacy continues in the primary sector of now Malaysia. The highest contribution of this sector comes from the agriculture of oil palm which introduced by French entrepeneur Henri Fauconnier in 1917. After more than 100 years in replacing rubber, the oil palm continues to prosper and remains lucrative to the economy. Majority of the oil palm plantations were once rubber plantation owned by the British and far sighted Baba to accommodate their enterprising trades. As mentioned earlier in the economic contributions that from the 19th to 20th century onwards the Baba also owned commercial plantations of rubber and later, oil palm. The earliest known were the Baba of Malacca that developed oil palm plantations such as Tan Chay Yan, Chan Cheng Siew, Tan Cheng Lock, Tan Chin Tuan, Song Ong Siang, Lee Cheng Yan, Tan Beng Swee and Tan Kim Seng. In the turn of Malaya Independence, many British owners sold their plantations to the locals of Chinese, Malays and national companies. At this period, the Baba or Peranakan were already known as Chinese. With the milestone of 100 years, oil palm industry of Malaysia has developed tremendously other than its role as edible oil. The accreditation from Roundtable on Sustainable Palm Oil (RSPO) has deemed that materials deriving from the oil palm crops of Malaysia are recognised safe, natural and renewable. The expansion of the industry enabled the research and development on the oil palm crops as well, many materials and oleo chemicals were produced for commercial use. Almost the entire crop can produce functional materials. The fibres of the empty fruit bunches (EFB) were commonly used to produce plain wrappers, containers and stationeries without aesthetic values.

In this research, the Peranakan decorative arts can be defined through the theory of mimesis. Based on the adoption of motifs and colours from other cultures such as the Chinese,

European and Malay to create their own Peranakan decorative arts, determined that the Peranakan would like to contained elements of their roots of predominantly Chinese, then Malay and admired the British as foreign power on their wealth and status. Hence, by mimicking similar style of the British, raised the stature of the Peranakan specifically the Baba.

Chapter 3 Research Methodology

Research Methodology is the main structure of research-based study. It is an approach of systematic investigation which includes analysis of methods to produce new findings in the particular field of study. Known as a data collection approach that can incorporate certain research instruments that can generate valuable data and information in the context of social analysis. This chapter provides the understanding on the application of research approaches in this research, mainly to define on the 2 areas of focus which are research method and research design. Detailed definition are provided on the research method and research design used to facilitate the mixed methods which are divided into 3 parts such as quantitative, qualitative and design development.

3.1 Research Methodology

In this research, the mixed method is employed which comprised of quantitative, qualitative and process experimentation, as shown in Figure 64 below. The research begun with quantitative approach based on the research design components of ground work study, literature review, research concept and formulation of keywords. With these information, the suitable research instruments are selected such as survey using structures questionnaire, sampling method, survey target, sample size, pilot test, data analysis tool and reliability and validity test. The quantified and tested results from quantitative research will then be used to facilitate the approach of qualitative research. Both quantitative and qualitative shared the same design research factors. With the available quantitative data, the research continued with qualitative approach using research instruments such as interview using semi structured questions, questions design, interview target, interview procedures, examining respondents, pilot test and analysis tool. Then outcomes of the quantitative and qualitative approaches were compiled and explained in findings in Chapter 4. The findings here were the determining factors of the process experiment as the preliminary area of the creative development. In the process experiment, testing were conducted on the material using various applications. Lastly, all the information obtained from the mixed methods approach of quantitative, qualitative and process experiment were be analysed, discussed and recommended.

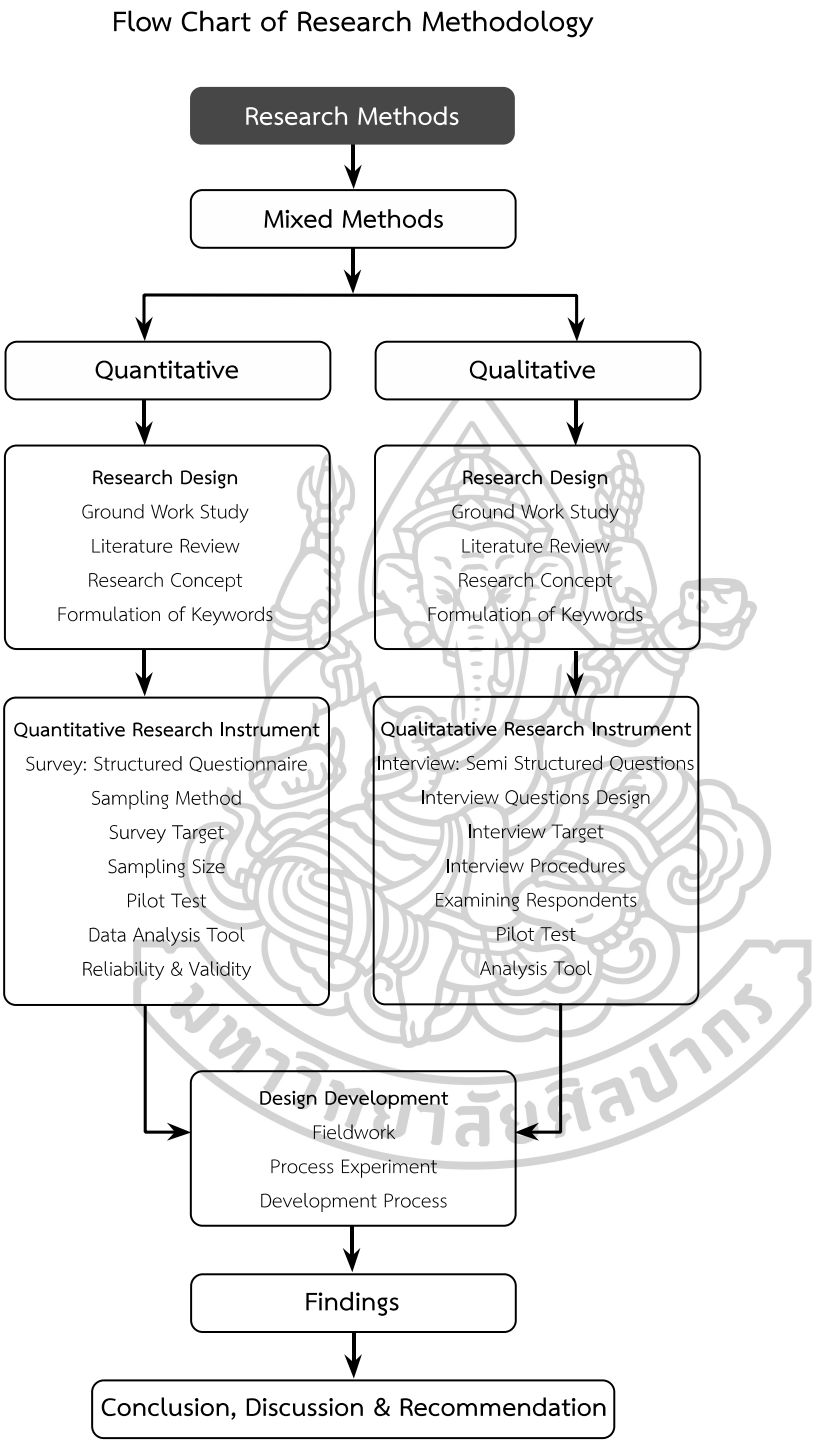

Figure 113 The Flow Chart of Research Methodology (Yeoh, 2019).

3.1.1 Mixed Methods

The approach of mixed methods research is a combination of quantitative and qualitative research in a particular study (Bryman, 2008). Considering the many available research methods, their advantages and disadvantages, it is concluded that this research will use both quantitative and qualitative methods. The methods employed for this research were the quantitative method through structured questionnaire surveys, while the qualitative method was carried out through semi structured interviews (personal interview) were used to support the surveys. These methods were chosen and used to complement one another. Surveys are clearly quantitative and interviews are qualitative which would provide mixed of both methods, using several methods to study the same object (Borg and Gall, 1989). Structured questionnaires and interviews are used in social survey research with the objectives of analysing matters relating to perception, attitude and practice (Bryman, 2008). With the findings obtained from these 2 research approach will be used to facilitate the process experiment to contribute on the crafting of design works.

3.1.1.1 Quantitative Research

The first research method used was the quantitative method which is based on survey; applied of collecting data from large sample size. This method was used to gather data for the development of information assumption through statistical analysis. In the quantitative approach, measurement plays an important role as it determines the possible connection among concepts. The design of the research is to facilitate the direction of cross-sectional research design. Therefore, this emphasized toward the quantitative method structure as part of the social research method and the format of structured questionnaire is selected for survey purposes. Next, the survey site used was Klang Valley which consisted of 5 areas such as Kuala Lumpur, Petaling Jaya, Subang Jaya, Shah Alam and Klang. Hypermarkets of Tesco and Giant in the listed areas are the specific venues for the survey; here consumers are used as respondents.

As for the research instrument, simple random sampling is employed for both pilot test and field survey. After the completion of the surveys, the answered questionnaires were sent for coding. Then, with the coded questionnaires, the questionnaires were analysed for information through the data analysis process that involves the software such as SPSS (Statistical Package for the Social Sciences) and Smart PLS. After the completion of the data analysis process, the results

showed the reliability and validity of it. Thus, the results of the data were used to facilitate the objectives of this research in the finding.

3.1.1.2 Qualitative Research

The second research method used was the qualitative method which correlates to interview; applied of collecting data from specific groups of respondents. Unlike quantitative, the approach of qualitative research more relevant towards cultural based knowledge specifically on social contexts of a particular population such as behaviours, values and opinions (Bryman, 2008). The design of the research is to facilitate the direction of ethnography research design, in which focused entirely on semi structured questions interview of respondents such as experts and designers from the industries. The purpose of the interviews is to seek their opinions to support the data from the quantitative research obtained from the consumers of Tesco and Giant hypermarkets in Klang Valley. With the availability of the supporting data helps strengthen the design concept in producing efficient product with the society, environment and economy in mind. Therefore, the results of the supporting data were used to facilitate the objectives of this research in findings at Chapter 4.

With this research, the researcher was required to record and recognize assumptions, trends, needs, behaviours and other information. With the data collected, unlike using statistical study, researcher searches for trends in which all alike statements from respondents. As the principle of qualitative that statement mentioned by 1 respondent is an anecdote, 2 respondents is a coincidence, 3 respondents is recognized as a trend. This trend which is identified will be used as the guidance in product design, development, commercial resolution and retailing approach (Madrigal and McClain, 2012).

3.2 Research Design

Research design is the framework of the accumulated analysed data. It also shows the scope of the research process intended for the research. Research design is significant as to prove new relations between variables, to create bigger association of individuals for research and to understand the societal development and interaction (Bryman, 2008). There are many variations of research design. In this research, the quantitative methods employed the structured

questionnaire onto the cross-sectional research. The significant of cross-sectional research is that data collected through this method provides various types of information from society, nation and organization, also that the variables from this data can be collected almost concurrently and all the data are quantifiable (quantitative) which provides persistent research standards (Bryman, 2008). In this research, the research design comprised of areas such as the ground work study, literature review, formulation of keywords, the survey research and the semi structured interview.

3.2.1 Ground Work Study

This research started with ground work which was conducted at an early stage in order to provide more contribution in the later stage to progress possible. This has involved visits to government departments, research centres, design firms and conferences. These places are namely Department of Statistics Malaysia, National Biomass Industries Confederation, Malaysian Palm Oil Council, Biomass Technology Centre of Universiti Putra Malaysia, Department of Chemistry University of Malaya, Nerve Design Centre, Eco Built Packaging Malaysia, Tetra Pak Malaysia, LVC Eco Pack and International Palm Oil Congress (PIPOC).

These places were visited to obtain more current information, to collect references and to meet individuals from similar platforms such as designers, researchers and marketers. No doubt not all of the individuals are willing to provide extended information except on published materials with the reason of confidential close door policy was given, but some were helpful and have provided their contacts and other useful contacts for further discussion. Few of them were invited to participate in interviews for qualitative research.

An earlier preparatory research was pursued to address the suitable location for field survey and concluded with the Klang Valley through the official data provided by Department of Statistics Malaysia. The Klang Valley is suitable and chosen based on its strategic location as a prominent commercial hub with wide coverage of industries, establishments, retail malls and residences. The area of the Klang Valley consists major townships of Kuala Lumpur, Petaling Jaya, Subang Jaya, Shah Alam and Klang.

3.2.2 Literature Review

In this research, the research commenced with the collection of information from the literature review such as Peranakan, Embroidery and Biodegradable. This preliminary information provides better understanding on the following:

1. To identify and define the keywords.
2. To develop research skills and to understanding on topic specification.
3. To identify significant variables for the formulation of questionnaire surveys and interviews.

The formation of literature was built through digital search engines, galleries, museums, university libraries, resource centres and own books. Most areas of the literature research were continued and conducted until the end of this research. Based on the literature research, there were few points to look into such as the following:

1. To examine the importance of Peranakan heritage.
2. To understand of the existing of Peranakan design and aesthetic concept.
3. To investigate the available biodegradable concept.

The other gathered information such as contacts and sources were obtained through personal career networking, antique collectors, conferences, Peranakan Federation of Singapore, Petronas Malaysia, Malaysian Palm Oil Council and Petroleum Thailand. All these preliminary data will be helpful during the phase of surveys and interviews. With literature review, the research concepts and keywords were preliminary formulated.

3.2.3 Research Concept

The literature review for this research was based on the key words such as Peranakan, Embroidery and Biodegradable Materials. As revealed in the literature, each of these keywords are defined with referred or peer reviewed literatures. The combination of these keywords will define the foundation of the entire research as well as the direction.

3.2.4 Formulation of Keywords

The keywords selected for this research was based on the design concept of the research which are clearly shown on the research title itself. The keywords are used to represent concise

and narrow information in the context of this research. With the contribution from in-depth knowledge through literature review able to provide precise grasp of keywords formulation.

3.3 Quantitative Research Instruments

This section elaborates on the selected research instrument and questionnaire design for this research in the direction of quantitative research approach. The quantitative research instrument is used to facilitate data collection using questionnaires. The collected data through sampling is checked for its validity and reliability to produce the final result.

3.3.1 Survey: Structured Questionnaire

In this research, the structured questionnaire was the instrument used for this survey. It is consistently designed in the format of questions relating to a study to obtain feedback from respondents with the intention of data compilation in mind. The samples are obtained from selected populations consist of respondents whom answered. The straight forward answered questionnaire will be regarded as data used for research generation purposes. Questions are developed in a non-bias and non-sensitive direction to avoid offensiveness towards certain respondents.

The questionnaire designed for this survey was enclosed with a cover letter mentioning the intention of the survey, information on the research subjects and the privacy and confidential understanding of respondents. The cover letter is required to lead the questionnaire used in survey to provide essential information and required response to respondents. Then it is followed with the main content of the questionnaire; there are 28 questions in total that are divided into 3 sections. The Section A is Respondent Profile that consists of 6 questions. Section B is Consumer Attitude that consists of 4 questions. In section A and B, respondents are required to select their suitable choices. Section C is Consumer Perception that consists of 17 questions that respondents are required to indicate their responses using the 5-point Likert Scale [1= strongly disagree (SD), 2= disagree (D), 3= neutral (N), 4= agree (A) and 5= strongly agree (SA)]. The final question of Section C is Consumer Suggestion that consists of 1 question that requires respondents to fill up in writing. The survey direction is to obtain information in answering the research questions such as:

1. Does the concept of biodegradable material have positive and significant influence on Peranakan decorative items?

2. Does the concept of biodegradable material applicable onto Peranakan decorative items?

3. Does the design prototype have positive and significant influence on the acceptance of consumers?

3.3.2 Sampling Method

In this research, the Simple Random Sampling method was used to evaluate the perception of the respondents within the population of selected locations of Klang Valley such as Kuala Lumpur, Petaling Jaya, Subang Jaya, Shah Alam and Klang, as shown in Figure 65 below. In the social sciences, the use of sampling in survey is known to be a favoured approach to collect data. Sampling is about selecting subjects for research measurement that usually concern humans, societies, urban areas and institutions. Other than being an instrument used in survey, it can also facilitate other research methods such as observation, visual and sound documentation and authentic facts documentation. Nevertheless, sampling can provide reliability and validity in the discoveries; low reliability sample produces insignificant discoveries.

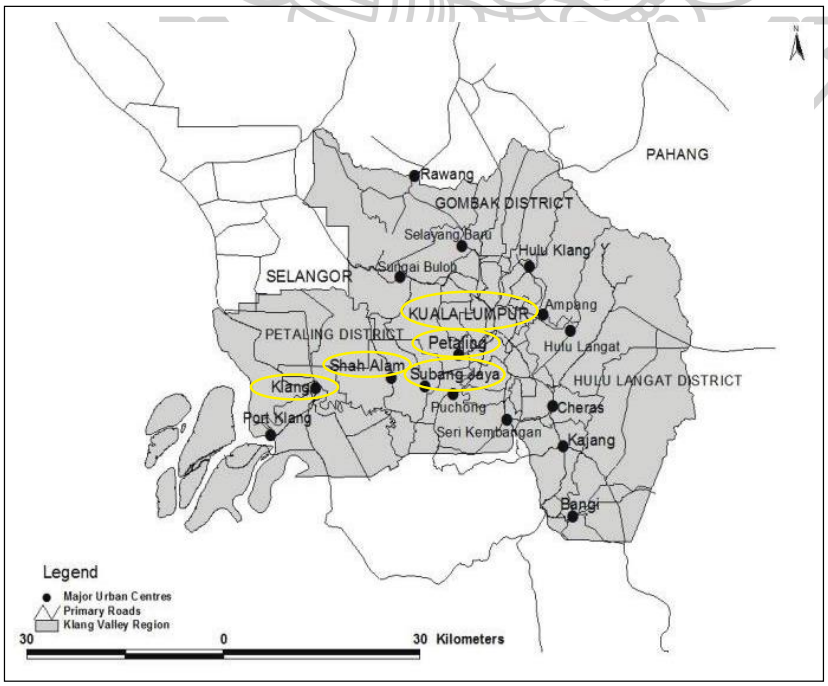

Figure 114 The Klang Valley Map (Mohd Faris Dziauddin, 2013)

3.3.3 Survey Target

The main purpose of this survey was to evaluate the understanding and perception on the concept of Peranakan Embroidery and Biodegradable Materials: Implications on Accessories and Decorative Items Design using respondents using Klang Valley hypermarket consumers. The reason Klang Valley is selected as the research site because it is strategically located with high traffic and commercial activities. The Klang Valley area covers Kuala Lumpur, Petaling Jaya, Subang Jaya, Shah Alam and Kelang as shown in Figure 66 below. These areas are bustling with academic, leisure and business activities. As mentioned by Professor Alias Abdullah of International Islamic University of Malaysia (IIUM) that being a business hub, it attracts people from other states of the nation. He also mentioned as comparatively to other parts of the nation, the Klang Valley has been a promising investment hub for few forty years (Lee, 2011). The management of Klang Valley zones are the State Government of Selangor, Federal Governments of Putrajaya and Kuala Lumpur (Alatas, 2011). The Klang Valley, which is also known as part of The Greater Kuala Lumpur consists the population of approximately 7.2 million, is one of the rapidly developing metropolitans in Malaysia. It is also being recognised as the most dynamic, urbane and contemporary cultured metropolitans of South East Asia (The Star, 2013).

From the selected research site of Klang Valley, there is a need to determine the survey sites that is suitable to conduct the survey. Therefore, Giant and Tesco hypermarkets in Kuala Lumpur, Petaling Jaya, Subang Jaya, Shah Alam and Klang are used as the survey sites as shown in Figure 66 below. As according to Chamhuri and Batt (2009) that Malaysia as an advancing country, from 1990 onwards the retail system has changed intensely where hypermarkets have taken over the role of conventional markets. This is a place where consumers can shop for products such as poultry, fresh produce, herbs, cleaners, office supplies, electronics and others. Thus, with this development, it is reported in the Eight Malaysia Plan of 2001 – 2005 that most consumers do their shopping at hypermarkets and the numbers are growing. Majority of the hypermarkets are situated at highly populated locations such as Selangor. Hypermarkets of Tesco and Giant are selected as survey sites as that both companies hold the largest market shares in Malaysia with Tesco at 45% after the acquisition of Carrefour and Giant at 24%, but also as a representative of the consumer shopping places in the Klang Valley (Permarupan, Mohan, Al-Mamun and Binti Zainol, 2014).

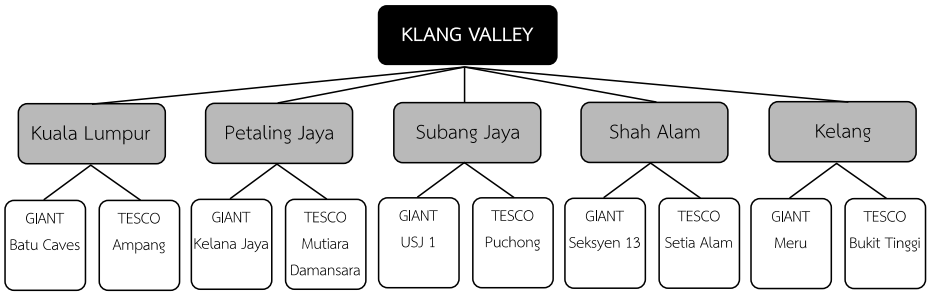

Figure 115 Survey Sites Model (Yeoh, 2018).

3.3.4 Sampling Size

In this research, samples were obtained from respondents whom are also consumers of Giant and Tesco hypermarkets in Klang Valley (Kuala Lumpur, Petaling Jaya, Subang Jaya, Shah Alam and Klang). These commercial centres have high traffic movement and good mixture of crowd who resides or works there. The total population in Klang Valley is 4,196,391 as according to the Population Distribution by Local Authority Areas and Mukims. The breakdowns for these areas are: Kuala Lumpur (1,588,750), Petaling Jaya (613,977), Subang Jaya (708,296), Shah Alam (541,306) and Klang (744,062) (Department of Statistics Malaysia, 2011). The sample size for Klang Valley is decided at 400 with 40 samples per site although only 384 samples are required as based on the justification below. Therefore, only 399 samples in total were collected instead of 400 samples as 1 sample is missing.

According to Chua (2006) that, the population size for 4,196,391, which are in between of 2,500,000 and 10,000,000 with 5% of margin error, sample size required is at 384. This is calculated using the following formula:

$$n = \frac{X2 * N * P * (1-P)}{(ME2 * (N-1)) + (X2 * P * (1-P))}$$

Where:

n = sample size

X2 = Chi –square for the specified confidence level at 1 degree of freedom

N = population size

P = population proportion (0.50 in this table)

ME = desired Margin of Error (expressed as a proportion)

3.3.5 Pilot Test

As for the survey questionnaire used in this research, the validation has been conducted by the course supervisor and few who are expertise in their own fields. The questionnaire is developed based on the research questions intended for this research. Important points were highlighted on the questionnaire structure by Mr Kho Lip Khoon, Research Officer of Malaysian Palm Oil Board. The narration efficiency and language grammar were validated by Miss Farhana Zamil Tinny, Communication Manager of Procharon Communication Limited. Corrections were made to simplify the structure of the questions for easy and clear understanding to respondents. She also suggested including a copy of cover letter to keep respondents well informed with the purpose and knowledge of the survey. As for the layout design of the questionnaire, Miss Jamie Lee, Senior Graphic Designer of Nerve Design Centre Sdn. Bhd. has extended her thoughts on the format of the questionnaire design. Feedbacks were provided on words and structure of the questions. The amendments were made on the questions accordingly and printed for the actual interviews.

3.3.6 Data Analysis Tool

In order to achieve the objective of this quantitative based research, IBM SPSS (Statistical Package for the Social Sciences) and Smart PLS (Partial Least Squares) software were used as the analytical tool to evaluate the significance of the data and correlation between the variables through Descriptive Statistics, Correlation, Reliability Test, Normality Test and T- Test. Statistical graphic such as bar charts and graphs will be used to illustrate analysed data. The data analysis functions as an aiding method in findings. According to Bryman (2008) that the data analysis tool was designed in the 60's during the invention of computers and up to date, it is the most utilised software in quantitative analysis.

3.3.7 Reliability and Validity

In the process of survey, questionnaire functioned as one of the most important method in collecting data consisting the same title and objectives of a specific study. Proper developed questionnaire plays important role to the researcher as a macro measurement tool. As the development of the questionnaire could be complex, hence attention and tediousness are required.

3.3.7.1 Reliability

In the pilot test conducted for this research, the result shows that the Cronbach's Alpha is measured at 0.764 as shown in Table 1 below. Therefore, this indicates the reliability of the pilot test is coefficient.

Table 1 Reliability Statistics on Pilot Test (Yeoh, 2018).

Cronbach's Alpha	N of Items
.764	27

3.3.7.2 Validity

Hereby, the validity of survey questionnaire used during the pilot test was conducted using 15 samples as shown in Figure 68 below. The 15 questionnaires with 27 questions were fully answered using Likert Scale where the Cronbach's Alpha is measured at 0.764 co-efficiency based on 27 questions as shown in Table 2 below.

Table 2 Validity Statistics on Pilot Test (Yeoh, 2018).

Section A: Respondent Profile

		A1	A2	A3	A4	A5	A6
N	Valid	15	15	15	15	15	15
	Missing	0	0	0	0	0	0

Section B: Attitude of Consumer on Decorative Items Made from Biodegradable Materials

		B7	B8	B9	B10
N	Valid	15	15	15	15
	Missing	0	0	0	0

Section C: Perception on Biodegradable Decorative Items Towards the Environment

		C11	C12	C13	C14	C15	C16	C17	C18	C19
N	Valid	15	15	15	15	15	15	15	15	15
	Missing	0	0	0	0	0	0	0	0	0

		C20	C21	C22	C23	C24	C25	C26	C27
N	Valid	15	15	15	15	15	15	15	15
	Missing	0	0	0	0	0	0	0	0

3.4 Qualitative Research Instruments

The other method which is also commonly employed in the social survey research is the qualitative method which is totally differ from quantitative method. The concept of qualitative research works provides information which are internal subjective, human centred, holistic and depth. Interviews are used in social survey research with the objectives of analysing matters relating to mind set, attitude and practice (Bryman, 2008).

The interview was conducted twice; pilot test and actual personal interview. Both the interviews were conducted in 2017 using the same set of semi- structured interview and respondents were experts and designers. The pilot test was conducted on 2 respondents with similar backgrounds. As for the personal interview, it was conducted on 6 respondents and all 6 samples were achieved. Interviews in many ways beneficial comparing to questionnaire, more space in explanation if the respondent is not clear and able to provide precise and detail feedback.

3.4.1 Interview: Semi Structured Questions

Most of the respondents were cooperative and committed to the interview sessions. Generally, they prefer personal interviews in comparison to self-filled questionnaires. Moreover, the questionnaire survey and the interviews methods used in the data collection attributed to one another which strengthen the findings for this research. During the interview sessions, information was obtained on the opinions of designers on their design criteria and preferences; and opinions from experts regarding their material standards and trends.

3.4.2 Interview Questions Design

The semi-structured interviews were used to collect concentrated qualitative data which provides a balance of the open-ended interview and the structured ethnographic survey which are useful on defining specific research questions. It provides in depth descriptive data on individual knowledge. In this area, the approach of semi-structured interviews is selected for personal interviews. All these are targeted on the experts and designers. As mentioned earlier, this approach is used to provide support to the quantitative method by collecting additional information.

3.4.3 Interview Target

As mentioned earlier, these selected respondents for the personal interviews were experts and experts such as designers and researchers. There are 12 interview samples in total which consists of 6 designers and 6 experts, in which all of these respondents have 5 years and above in their respective fields. These respondents were personally selected and approached to discuss matters pertaining to the study. These individual's experiences and opinions were sought in providing in depth information and also facilitating the study. Proper preparation was done before the start of the personal interviews such as telephone calls were made to confirm on the appointment locations, dates and time for the personal interviews to be conducted.

3.4.4 Personal Interview Approach

The interview process was conducted using only one approach through a normal process of interview, where person to person communication with reference to a set of pre-planned questions was used as a guide and reference for the interviews which is known in this thesis as personal interviews approach. For the personal interviews, the respondents were personally approached with semi-structured interviews through a set of pre-planned questions. The interviews and discussions took place in the premises of the respondents. The personal interviews were documented through voice recording and writing.

3.4.5 Interview Procedures

For those respondents willing to participate in the interviews, appointments were made, and respondents approached. To gain the confidence of the respondents, and to make the respondents feel comfortable and to participate better, assurance has been made to ensure the interviews were conversational type that the respondents are required to answer questions in a methodical manner, the respondents are allowed to answer freely and are not required to do self-fill the answers. The designer group of respondents were more flexible and able to go with the flow, but for the experts, a week prior to the interview, interview questions were delivered and appointments were made as they were more occupied.

During the interviews, formal introduction with the official university letter was provided. This followed with a brief explanation on the study concept and intention of the interview were explained again as part of the academic ethics; to make sure the respondents are fully aware and understand. Lastly, voice recording procedure was explained to the respondents as to seek approval, note taking such as writing were used for those who declined.

3.4.6 Examining Respondents

As mentioned earlier, this part of the qualitative research method was used to provide the support for the produced quantitative data, therefore the respondents selected were the designer group and expert group. These respondents were selected based on their willingness to participate in the interview sessions. All these respondents have the industry experience of at least 5 years and above. Their profiles are as below:

<u>Designer Group</u>

1. Chris See, Senior Product Designer of Kian Joo Can Factory Sdn. Bhd.
2. Adrianna Loong, Product Designer of Mabuchi Package (M) Sdn. Bhd.
3. Sylvain Vanderhaegen, Product Designer of Luid Studio (M) Sdn. Bhd.
4. James Gunawan, Creative Art Director of Empire Creative Works, Indonesia.
5. Shazliana Binti Samsuddin, Graphic Designer of Foodabox Dot Com Sdn. Bhd.
6. Hon Khai Shuen, Visual Communication Designer of Eco Solution Limited, Hong Kong.

Expert Group

1. Professor Dr. Richard Wong, Researcher of Department of Chemistry, Universiti Malaya.
2. Dr. Khoo Lip Eik, Researcher of Malaysian Palm Oil Board.
3. Dr. Nazim Zainal, Application Technologist of Petronas (MITCO) Sdn. Bhd.
4. Sam Chew, Application Engineer of BMI Chemical Corporation Sdn. Bhd.
5. Bernard Yong, Chief Marketing Officer of BPlast Sdn. Bhd.
6. Wee Kheng Lin, Marketing Director of Green Earth Marketing (M) Sdn. Bhd.

3.4.7 Designer Group

The total of 6 respondents from the designer group were employed through the author's personal industry contacts. Not many are able to participate due to heavy work schedule and travelling, only total of 6 respondents agreed to be interviewed through personal interview. Therefore, preparations were made such as telephone calls for appointment confirmation, then the interviews took place 1 week later. Overall, the entire process to complete the interviews with the 6 respondents took 2 weeks period. The list of respondents of these interviews are summarised and included in Appendices.

3.4.8 Expert Group

For this group, the contacts belong to the author as well which were obtained through conferences, research centres and government departments. They are individuals from design, research and consumer related fields were essential to help enrich the data and illuminate opinions for this research. They were selected based on their willingness and readiness to spare some of their busy time to participate in the interview sessions. Initially, only five respondents were available for the personal interview but after much persuasion, another 1 agreed. Therefore, the total were 6 respondents.

The respondents were contacted through telephone calls and were later approached. A week prior to the interview, interview questions were delivered and appointments were made. A week's period of grace was given to each of the respective respondents for them to study and digest the questions for the personal interviews. The interviews were carried out over 5 weeks

period with these 6 respondents. The list of respondents of these interviews are summarised and included in Appendices.

3.4.9 Pilot Test

The pilot test is a pre-test of the questions employed in interviews, this is the only method to ensure the questions work correctly and to filter potential biases, sensitivity and misunderstandings. Therefore, the pilot test also provides opportunities for amendments required for the concept, structure, grammar and spelling of the questions.

In this study, before proceeding for the actual interview, the proposed questions were presented for discussions with course supervisor and work colleagues of design industry. Also, that, the pilot test was conducted with 2 designers from the industry and 2 university design lecturers (ex-colleagues). Feedbacks were provided on words and structure of the questions. Next, amendments were made on the questions accordingly and printed for the actual interviews.

3.4.10 Analysis Tool

In this area of tabulation information from qualitative approach, is differed from statistical approach. Here, the word trend was used to analyse statements of interviewed respondents which could be guided through the question or interview format. During the interview, factors and results from previous quantitative data was discussed in a focus direction helped to achieved required outcomes. In the post interview, words are identified and categorised based on the alikeness in recorded statements which adhered to the qualitative principles. As the principle of qualitative that statement mentioned by 1 respondent is an anecdote, 2 respondents is a coincidence, 3 respondents is recognized as a trend. This trend which is identified will be used as the guidance in product design, development, commercial resolution and retailing approach (Madrigal and McClain, 2012).

3.5 Design Development

The design development comprised of 3 areas such fieldwork, process experiment and development process. The outcomes from fieldwork and process experiment were used to provide for development process in the construction of artwork prototypes.3.5.1 Fieldwork

The fieldwork comprised of external preparation needed to facilitate the area of design development in the real world. This enabled the collection of visual, ethnographic and conceptual information. As a method of investigation through visual and written primary documentation which enable personal appreciation on the research subjects.

3.5.1 Process Experiment

In this part, outcomes of the quantitative and qualitative were used as guidelines for conceptual design construction. Before the start of design development, process experiment is required on material testing. There are 6 applications selected for this experiment such as cut, fold, print, emboss, sew and wrap. The main purpose of this experiment is to verify the viability of the material by comparing results of hand and machine crafting.

3.5.2 Development Process

The development process area demonstrated the construction of the selected concepts. This area showed the formation of 2 dimensional to 3 dimensional prototype of artworks with collaboration of techniques used in the process experiment and information gained from fieldwork.

3.6 Summary

In this chapter of the research, the entire process in achieving the intended results has involved quantitative, qualitative and process experimentation to prepare the information data and results needed for the findings in Chapter 4 as shown in The Flow Chart of Research Methodology. In this research, the mixed method is employed to collect information from Klang Valley hypermarket consumers.

The primary part of this research is the preliminary preparation, research and the ground work research where literature searches and reviews are conducted based on the formulated keywords which were produced based on the dissection and development of the research. Then followed by the second part of approaches was the quantitative research instruments, survey, sampling method, survey target, sampling size, pilot test, data analysis tool, reliability and validity in defining research samples and parameters. Next, the third part of approaches was the

qualitative research instruments, interview, questions design, interview target, interview procedures, examining respondents, pilot test and analysis tool. With all the results achieved from the quantitative and qualitative areas, the outcomes are used as reference points in design development as well supplemented on the process experimentation. The process experiment such as laser cut, emboss, fold, print, sew and wrap are conducted to test selected material on its viability to accommodate intended crafting of prototype artworks. All these steps are employed to provide the intended results for the findings that determine the hypothesis and resolve the research questions and research objectives of this study.

Chapter 4 Data Analysis, Interview, Experiment and Findings

This chapter provides the information of the researches conducted for this research. The findings are presented in according to the research topic and sub topic that able to provide a clearer view on the perception and acceptance on decorative items using biodegradable materials as an alternative to conventional materials. There are 4 parts which starts with Part 1 on Quantitative Research which provides the data analysis generated through the SPSS and Smart PLS (Partial Least Squares) applications to determine the confirmation on hypothesis as well the findings. Part 2 describes the Quantitative Research which focused on the industry groups such as designer and expert. The verbal information was obtained through personal interview and the outcomes were generated using word trend method. Part 3 illustrates the process experiment on the material used on the design models or prototypes with the employment of different types of tools and technologies. All the information from these 3 parts are then conclusively summarised and discussed in area of Findings.

Part 1

4.1 Quantitative

In this section of quantitative research, the survey results are emphasized from the simple random sampling conducted on the consumers of Giant and Tesco hypermarkets in Klang Valley (Kuala Lumpur, Petaling Jaya, Subang Jaya, Shah Alam and Klang). During the process of data collection, total of 400 consumers participated in filling up the survey questionnaires. However, after the screening and cleaning processes, out of the 400 samples, only 399 samples can be used. The data is allocated into 3 categories such as respondent profile, consumer attitude and consumer perception.

All information in this chapter are obtained using data analysis generated through the SPSS and Smart PLS (Partial Least Squares) applications to determine the findings as well as other information gathered from various resources will be reported as according to specific topic and sub topic that subsequently provide a clearer view on the perception and acceptance of using biodegradable materials on decorative items design. In this chapter, the data of samples are

summarized using Descriptive Statistics, Correlation and Reliability Test. This analysis will also further discuss on the design concept, material, viability, design method and the willingness of consumers in using biodegradable materials on daily basis.

4.1.1 The Background of Respondents

In this section, the survey results are emphasized from the simple random sampling conducted on the consumers of Giant and Tesco hypermarkets in Klang Valley (Kuala Lumpur, Petaling Jaya, Subang Jaya, Shah Alam and Klang). During the process of data collection, total of 400 consumers participated in filling up the survey questionnaires. However, after the screening and cleaning processes, out of the 400 samples, only 399 samples can be used. The data is allocated into 3 categories such as respondent profile, consumer attitude and consumer perception.

4.1.1.1 Gender

Table 3 below shows there are 0.8% respondents missing from the total of 399 respondents. Therefore, 46.4% of the respondents were male and 52.9% respondents were female. From here, the higher percentages of respondents were female and the lower percentages of respondents were male.

Table 3 Gender

Category	Frequency	Percentage
Gender		
Male	185	46.6
Female	211	52.9
Missing	3	.8
Total	399	100.0

4.1.1.2 Ethnic

Table 4 below shows there are 0.3% respondents missing from the total of 399 respondents. Therefore, 42.6% of the respondents were Malay, 51% of the respondents were Chinese, 6.4% of the respondents were Indian and 1.8% of the respondents were from other ethnics. From here, the higher percentages of respondents were Malay and the lower percentages of respondents were other ethnics.

Table 4 Ethnic

Category	Frequency	Percentage
Ethnic		
Malay	524	42.6
Chinese	637	51.0
Indian	79	6.4
Others	7	1.8
Missing	1	.3
Total	399	100.0

4.1.1.3 Age

Table 5 below shows there are 0.3% respondents missing from the total of 399 respondents. Therefore, 41.4% of the respondents were aged 18 – 30, 34.1% of the respondents were aged 31 – 40, 21.8% of the respondents were aged 41 – 60 and 2.5% of the respondents were aged 60 and above. From here, the higher percentages of respondents were aged 18 – 30 and the lower percentages of respondents were aged 60 and above.

Table 5 Age

Category	Frequency	Percentage
Age		
18 - 30	165	41.4
31 - 40	136	34.1
41 – 60	87	21.8
>60	10	2.5
Missing	1	.3
Total	399	100.0

4.1.1.4 Marital Status

Table 6 below shows there are 0.5% respondents missing from the total of 399 respondents. Therefore, 66.7% of the respondents were married and 32.8% of the respondents were single. From here, the higher percentages of respondents were married and the lower percentages of respondents were single.

Table 6 Marital

Category	Frequency	Percentage
Marital Status		
Married	266	66.7
Single	131	32.8
Missing	2	.5
Total	399	100.0

4.1.1.5 Education

Table 7 below shows there are 0.5% respondents missing from the total of 399 respondents. Therefore, 2% of the respondents were educated up to primary level, 20.3% of the respondents were educated up to secondary level, 37.8% of the respondents were educated up to college level, 36.3% of the respondents were educated up to university level and 3% of the respondents were educated up to other levels. From here, the higher percentages of respondents were educated up to college level and the lower percentages of respondents were educated up to primary level.

Table 7 Education

Category	Frequency	Percentage
Education		
Primary	8	2.0
Secondary	81	20.3
College	151	37.8
University	145	36.3
Others	12	3.0
Missing	2	
Total	399	100.0

4.1.1.6 Occupation

Table 8 below shows there are 0.3% respondents missing from the total of 399 respondents. Therefore, 23.1% of the respondents were students, 15.3% of the respondents were housewives, 3.5% of the respondents were pensioners, 2.5% of the respondents were unemployed, 20.1% of the respondents were self-employed, 12.5% of the respondents were from the sales and services industry, 18.8% of the respondents were professionals and 4% of the respondents were

from other types of occupation. From here, the higher percentages of respondents were students and the lower percentages of respondents were unemployed.

Table 8 Occupation

Category	Frequency	Percentage
Occupation		
Student	92	23.1
Housewife	61e	15.3
Pensioner	14	3.5
Unemployed	10	2.5
Self-employed	80	20.1
Sales & Services	50	12.5
Professional	75	18.8
Others	16	4.0
Missing	1	.3
Total	399	100.0

4.1.1.7 Distance

Table 9 below shows there are 0.3% respondents missing from the total of 399 respondents. Therefore, 10.3% of the respondents were living less than 1 kilometre travelling distance from the hypermarket, 37.3% of the respondents were living from 1 kilometre to 3 kilometres travelling distance from the hypermarket and 52.1% of the respondents were living more than 3 kilometres travelling distance from the hypermarket. From here, the higher percentages of respondents were living more than 3 kilometres travelling distance from the hypermarket and the lower percentages of respondents were living less than 1 kilometre travelling distance from the hypermarket.

Table 9 Distance

Category	Frequency	Percentage
Distance		

< 1km	41	10.3
1 – 3km	149	37.3
> 3km	208	52.1
Missing	1	.3
Total	399	100.0

4.1.1.8 Times

Table 10 below shows there are 0.5% respondents missing from the total of 399 respondents. Therefore, 34.8% of the respondents were shopping 1 time in a month at the hypermarket, 54.6% of the respondents were shopping 2 to 3 times in a month at the hypermarket and 10% of the respondents were shopping more than 3 times in a month at the hypermarket. From here, the higher percentages of respondents were shopping 2 to 3 times in a month at the hypermarket and the lower percentages of respondents were shopping more than 3 times in a month at the hypermarket.

Table 10 Times

Category	Frequency	Percentage
Times		
1	139	34.8
2 - 3	218	54.6
> 3	40	10.0
Missing	2	.5
Total	399	100.0

4.1.1.9 Spending

Table 11 below shows there are 0.5% respondents missing from the total of 399 respondents. Therefore, 57.4% of the respondents were spending less than RM300 in a month at the hypermarket, 38.3% of the respondents were spending from RM300 to RM500 in a month at the hypermarket and 4.3% of the respondents were spending more than RM500 in a month at the hypermarket. From here, the higher percentages of respondents were spending less than RM300 in a month at the hypermarket and the lower percentages of respondents were spending more than RM500 in a month at the hypermarket.

Table 11 Spending

Category	Frequency	Percentage
Spending		
< RM300	228	57.4
RM300 – RM500	152	38.3
> RM500	17	4.3
Missing	2	.3
Total	399	100.0

4.1.1.10 Packaging Material

Table 12 below shows there are 1% respondents missing from the total of 399 respondents. Therefore, 2% of the respondents preferred to use paper packaging material, 20.3% of the respondents preferred to use cloth packaging material and 37.8% of the respondents preferred to use plastic packaging material. From here, the higher percentages of respondents preferred to use plastic packaging material and the lower percentages of respondents preferred to use paper packaging material.

Table 12 Packaging Material

Category	Frequency	Percentage
Packaging Material		
Paper	97	2.0
Cloth	106	20.3
Plastic	192	37.8
Missing	4	1.0
Total	399	100.0

4.1.2 Descriptive Statistics

The results of the descriptive statistics are based on survey that was conducted across Klang Valley such as Klang, Shah Alam, Subang Jaya, Petaling Jaya

and Kuala Lumpur. The 399 respondents came from diverse backgrounds based on the respondent profiles. The questionnaire consists of 3 sections such as Section A (respondent profile), Section B (consumer attitude) and Section C (consumer perception) with 27 questions in total. The main concern of this survey is to examine the importance, acceptance, understanding and recommendation on the decorative items made from biodegradable materials.

4.1.2.1 Biodegradable Material Can Save the Environment

Table 13 below shows there are 0.8% respondents missing from the total of 399 respondents. Therefore, 3.5% of the respondents were neutral, 35.6% of the respondents agreed and 60.2% of the respondents strongly agreed that biodegradable material can save the environment. From here, the higher percentages of respondents strongly agreed that biodegradable material can save the environment and the lower percentages of respondents were neutral on this factor. However, the total of respondents from the agreed and strongly agreed categories show that 95.8% of the respondents support the statement of biodegradable material can save the environment.

Table 13 (C11) Biodegradable Material Can Save the Environment

Category	Frequency	Percentage
Neutral	14	3.5
Agree	142	35.6
Strongly Agree	240	60.2
Missing	3	.8
Total	399	100.0

4.1.2.2 Biodegradable Material Can Improve Lifestyle

Table 14 below shows there are 1% respondents missing from the total of 399 respondents. Therefore, 0.5% of the respondents disagreed, 5.3% of the

respondents were neutral, 54.1% of the respondents were agreed and 39.1% of the respondents strongly agreed that biodegradable material can improve lifestyle. From here, the higher percentages of respondents agreed that biodegradable material can save improve lifestyle and the lower percentages of respondents disagreed with this statement. However, the total of respondents from the agreed and strongly agreed categories show that 93.2% of the respondents support the statement of biodegradable material can improve lifestyle.

Table 14 (C12) Biodegradable Material Can Improve Lifestyle

Category	Frequency	Percentage
Disagree	2	.5
Neutral	21	5.3
Agree	216	54.1
Strongly Agree	156	39.1
Missing	4	1.0
Total	399	100.0

4.1.2.3 Biodegradable Material on Daily Use Can Reduce Waste

Table 15 below shows there are 1% respondents missing from the total of 399 respondents. Therefore, 0.5% of the respondents disagreed, 5.8% of the respondents were neutral, 45.6% of the respondents were agreed and 47.1% of the respondents strongly agreed that biodegradable material on daily use can reduce waste. From here, the higher percentages of respondents were strongly agreed that biodegradable material on daily use can reduce waste and the lower percentages of respondents disagreed with this statement. However, the total of respondents from the agreed and strongly agreed categories show that 92.7% of the respondents support the statement biodegradable material on daily use can reduce waste.

Table 15 (C13) Biodegradable Material on Daily Use Can Reduce Waste

Category	Frequency	Percentage
Disagree	2	.5

Neutral	23	5.8
Agree	182	45.6
Strongly Agree	188	47.1
Missing	4	1.0
Total	399	100.0

4.1.2.4 Biodegradable Material is Better Compare to Pulp Paper and Plastic

Table 16 below shows there are 0.8% respondents missing from the total of 399 respondents. Therefore, 0.3% of the respondents strongly disagreed, 0.3% of the respondents disagreed, 11.5% of the respondents were neutral, 50.9% of the respondents agreed and 36.3% of the respondents strongly agreed that biodegradable material is better compare to pulp paper and plastic. From here, the higher percentages of respondents were agreed that biodegradable material is better compare to pulp paper and plastic and the lower percentages of respondents strongly disagreed and disagreed with this statement. However, the total of respondents from the agreed and strongly agreed categories show that 87.2% of the respondents support the statement of biodegradable material is better compare to pulp paper and plastic.

Table 16 (C14) Biodegradable Material is Better Compare to Pulp Paper and Plastic

Category	Frequency	Percentage

Strongly Disagree	1	.3
Disagree	1	.3
Neutral	46	11.5
Agree	203	50.9
Strongly Agree	145	36.3
Missing	3	.8
Total	399	100.0

4.1.2.5 Biodegradable Material is Ideal to Use on Peranakan Arts

Table 17 below shows there are 0.8% respondents missing from the total of 399 respondents. Therefore, 12.5% of the respondents were neutral, 47% of the respondents agreed and 40.4% of the respondents strongly agreed that biodegradable material is ideal to use on Peranakan Arts. From here, the higher percentages of respondents agreed that biodegradable material is ideal to use on Peranakan Arts and the lower percentages of respondents were neutral on this factor. However, the total of respondents from the agreed and strongly agreed categories show that 87.4% of the respondents support the statement of biodegradable material is ideal to use on Peranakan Arts.

Table 17 (C15) Biodegradable Material is Ideal to Use on Peranakan Arts

Category	Frequency	Percentage
Neutral	50	12.5
Agree	186	47.0
Strongly Agree	160	40.4
Missing	3	.8
Total	399	100.0

4.1.2.6 Biodegradable Peranakan Arts Must be Easily Disposed

Table 18 below shows there are 0.8% respondents missing from the total of 399 respondents. Therefore, 0.3% of the respondents disagreed, 9% of the

respondents were neutral, 56.1% of the respondents agreed and 33.8% of the respondents strongly agreed that biodegradable Peranakan arts must be easily disposed. From here, the higher percentages of respondents agreed that biodegradable Peranakan arts must be easily disposed and the lower percentages of respondents disagreed with this statement. However, the total of respondents from the agreed and strongly agreed categories show that 89.9% of the respondents support the statement of biodegradable Peranakan arts must be easily disposed.

Table 18 (C16) Biodegradable Peranakan Arts Must be Easily Disposed

Category	Frequency	Percentage
Disagree	1	.3
Neutral	36	9.0
Agree	224	56.1
Strongly Agree	135	33.8
Missing	3	.8
Total	399	100.0

4.1.2.7 Biodegradable Peranakan Arts are Good for Daily Use

Table 19 below shows there are 0.8% respondents missing from the total of 399 respondents. Therefore, 0.3% of the respondents strongly disagreed, 0.5% of the respondents disagreed, 11.5% of the respondents were neutral, 60.9% of the respondents agreed and 26.1% of the respondents strongly agreed that biodegradable Peranakan arts are good for daily use. From here, the higher percentages of respondents agreed that biodegradable Peranakan arts are good for daily use and the lower percentages of respondents strongly disagreed with this statement. However, the total of respondents from the agreed and strongly agreed categories show that 87% of the respondents support the statement of biodegradable Peranakan arts are good for daily use.

Table 19 (C17) Biodegradable Peranakan Arts are Good for Daily Use

Category	Frequency	Percentage
Strongly Disagree	1	.3

Disagree	2	.5
Neutral	46	11.5
Agree	243	60.9
Strongly Agree	104	26.1
Missing	3	.8
Total	399	100.0

4.1.2.8 Biodegradable Material Must Meet Health and Safety Standards

Table 20 below shows there are 0.8% respondents missing from the total of 399 respondents. Therefore, 8% of the respondents were neutral, 57.6% of the respondents agreed and 33.6% of the respondents strongly agreed that biodegradable material must meet health and safety standards. From here, the higher percentages of respondents strongly agreed that biodegradable material must meet health and safety standards and the lower percentages of respondents were neutral on this factor. However, the total of respondents from the agreed and strongly agreed categories show that 91.2% of the respondents support the statement of biodegradable material must meet health and safety standards.

Table 20 (C18) Biodegradable Material Must Meet Health and Safety Standards

Category	Frequency	Percentage
Neutral	32	8.0
Agree	230	57.6
Strongly Agree	134	33.6
Missing	3	.8
Total	399	100.0

4.1.2.9 Biodegradable Material is Highly Acceptable by Consumers

Table 21 below shows there are 0.8% respondents missing from the total of 399 respondents. Therefore, 0.8% of the respondents disagreed, 14% of the

respondents were neutral, 46.1% of the respondents agreed and 38.3% of the respondents strongly agreed that biodegradable material is highly acceptable by consumers. From here, the higher percentages of respondents agreed that biodegradable material is highly acceptable by consumers and the lower percentages of respondents disagreed with this statement. However, the total of respondents from the agreed and strongly agreed categories show that 84.4% of the respondents support the statement of biodegradable material is highly acceptable by consumers.

Table 21 (C19) Biodegradable Material is Highly Acceptable by Consumers

Category	Frequency	Percentage
Disagree	3	.8
Neutral	56	14.0
Agree	184	46.1
Strongly Agree	153	38.3
Missing	3	.8
Total	399	100.0

4.1.2.10 Biodegradable Material is Easily Available to Consumers

Table 22 below shows there are 1% respondents missing from the total of 399 respondents. Therefore, 1.3% of the respondents strongly disagreed, 6.3% of the respondents disagreed, 16.8% of the respondents were neutral, 48.6% of the respondents agreed and 26.1% of the respondents strongly agreed that biodegradable material is easily available to consumers. From here, the higher percentages of respondents were agreed that biodegradable material is easily available to consumers and the lower percentages of respondents strongly disagreed with this statement. However, the total of respondents from the agreed and strongly agreed categories show that 74.7% of the respondents support the statement of biodegradable decorative items are easily available to consumers.

Table 22 (C20) Biodegradable Material is Easily Available to Consumers

Category	Frequency	Percentage
Strongly Disagree	5	1.3

Disagree	25	6.3
Neutral	67	16.8
Agree	194	48.6
Strongly Agree	104	26.1
Missing	4	1.0
Total	399	100.0

4.1.2.11 Biodegradable Material is Affordable to Consumers

Table 23 below shows there are 0.8% respondents missing from the total of 399 respondents. Therefore, 0.5% of the respondents strongly disagreed, 4% of the respondents disagreed, 21.1% of the respondents were neutral, 45.4% of the respondents agreed and 28.3% of the respondents strongly agreed that biodegradable material is affordable to consumers. From here, the higher percentages of respondents were agreed that biodegradable material is affordable to consumers and the lower percentages of respondents strongly disagreed with this statement. However, the total of respondents from the agreed and strongly agreed categories show that 73.7% of the respondents support the statement of biodegradable material is affordable to consumers.

Table 23 (C21) Biodegradable Material is Affordable to Consumers

Category	Frequency	Percentage
Strongly Disagree	2	.5

Disagree	16	4.0
Neutral	84	21.1
Agree	181	45.4
Strongly Agree	113	28.3
Missing	3	.8
Total	399	100.0

4.1.2.12 Biodegradable Material is Solving Waste Disposal Issues

Table 24 below shows there are 0.8% respondents missing from the total of 399 respondents. Therefore, 0.5% of the respondents disagreed, 6.8% of the respondents were neutral, 63.7% of the respondents agreed and 28.5% of the respondents strongly agreed that biodegradable material is solving waste disposal issues. From here, the higher percentages of respondents agreed that biodegradable material is solving waste disposal issues and the lower percentages of respondents disagreed with this statement. However, the total of respondents from the agreed and strongly agreed categories show that 92.2% of the respondents support the statement of biodegradable material is solving waste disposal issues.

Table 24 (C22) Biodegradable Material is Solving Waste Disposal Issues

Category	Frequency	Percentage
Disagree	2	.5
Neutral	27	6.8
Agree	254	63.7
Strongly Agree	113	28.5
Missing	3	.8
Total	399	100.0

4.1.2.13 Biodegradable Material is Beneficial to the Society, Environment and Economy

Table 25 below shows there are 0.8% respondents missing from the total of 399 respondents. Therefore, 1.5% of the respondents disagreed, 15.8% of the

respondents were neutral, 54.9% of the respondents agreed and 27.1% of the respondents strongly agreed that biodegradable material is beneficial to the society, environment and economy. From here, the higher percentages of respondents were agreed that biodegradable material is beneficial to the society, environment and economy and the lower percentages of respondents strongly disagreed with this statement. However, the total of respondents from the agreed and strongly agreed categories show that 82% of the respondents support the statement of biodegradable material is beneficial to the society, environment and economy.

Table 25 (C23) Biodegradable Material is Beneficial to the Society, Environment and Economy

Category	Frequency	Percentage
Disagree	6	1.5
Neutral	63	15.8
Agree	219	54.9
Strongly Agree	108	27.1
Missing	3	.8
Total	399	100.0

4.1.2.14 Biodegradable Peranakan Arts must be Functional

Table 26 below shows there are 1.3% respondents missing from the total of 399 respondents. Therefore, 10.8% of the respondents were neutral, 44.4% of the respondents agreed and 43.6% of the respondents strongly agreed that biodegradable Peranakan arts must be functional. From here, the higher percentages of respondents agreed that biodegradable Peranakan arts must functional and the lower percentages of respondents were neutral on this factor. However, the total of respondents from the agreed and strongly agreed categories show that 88% of the respondents support the statement of biodegradable decorative items must be functional.

Table 26 (C24) Biodegradable Peranakan Arts must be Functional

Category	Frequency	Percentage

Neutral	43	10.8
Agree	177	44.4
Strongly Agree	174	43.6
Missing	5	1.3
Total	399	100.0

4.1.2.15 Biodegradable Peranakan Arts must be Low in Weight

Table 27 below shows there are 1% respondents missing from the total of 399 respondents. Therefore, 0.3% of the respondents disagreed, 6.8% of the respondents were neutral, 63.9% of the respondents agreed and 28.1% of the respondents strongly agreed that biodegradable Peranakan arts must low in weight. From here, the higher percentages of respondents were agreed that biodegradable Peranakan arts must be low in weight and the lower percentages of respondents disagreed with this statement. However, the total of respondents from the agreed and strongly agreed categories show that 92% of the respondents support the statement of biodegradable Peranakan arts must be low in weight.

Table 27 (C25) Biodegradable Peranakan Arts must be Low in Weight

Category	Frequency	Percentage
Disagree	1	.3
Neutral	27	6.8
Agree	255	63.9
Strongly Agree	112	28.1
Missing	4	1.0
Total	399	100.0

4.1.2.16 Biodegradable Peranakan Arts must be Durable

Table 28 below shows there are 1% respondents missing from the total of 399 respondents. Therefore, 0.3% of the respondents strongly disagreed, 1.8% of the respondents disagreed, 10% of the respondents were neutral, 50.9% of the

respondents agreed and 36.1% of the respondents strongly agreed that biodegradable Peranakan arts must be durable. From here, the higher percentages of respondents were agreed that biodegradable Peranakan arts must be durable and the lower percentages of respondents strongly disagreed with this statement. However, the total of respondents from the agreed and strongly agreed categories show that 87% of the respondents support the statement of biodegradable Peranakan arts must be durable.

Table 28 (C26) Biodegradable Peranakan Arts must be Durable

Category	Frequency	Percentage
Strongly Disagree	1	.3
Disagree	7	1.8
Neutral	40	10.0
Agree	203	50.9
Strongly Agree	144	36.1
Missing	3	.8
Total	399	100.0

4.1.2.17 Biodegradable Peranakan Arts Items must be Natural

Table 29 below shows there are 1% respondents missing from the total of 399 respondents. Therefore, 0.5% of the respondents disagreed, 9.3% of the respondents were neutral, 59.6% of the respondents agreed and 29.6% of the respondents strongly agreed biodegradable Peranakan arts must be natural. From here, the higher percentages of respondents were agreed that biodegradable Peranakan arts must be natural and the lower percentages of respondents disagreed with this statement. However, the total of respondents from the agreed and strongly agreed categories show that 89.2% of the respondents support the statement of biodegradable Peranakan arts must be natural.

Table 29 (C27) Biodegradable Peranakan Arts Items must be Natural

Category	Frequency	Percentage
Disagree	2	.5

Neutral	37	9.3
Agree	238	59.6
Strongly Agree	118	29.6
Missing	4	1.0
Total	399	100.0

4.2 Reliability Analysis

Table 30 below shows the results confirming that all the variables are strongly cohesive, single and conceptually constructed. It also determines the value of Cronbach's Alpha for all the variables are higher than the accepted value of 0.70 with Concept of Decorative Items at 0.870, Design Model at 0.772, Application of Decorative Items at 0.779 and Biodegradable Materials at 0.814. Therefore, this also indicates the reliability of the field test is coefficient.

Table 30 Quality Criteria on Reliability Analysis

	Cronbach's Alpha
Concept of Decorative Items	0.870
Design Model	0.772
Application of Decorative Items	0.779
Biodegradable Materials	0.814

4.3 Model Specification

The development of the path diagram was conducted after the measurement model was established for all the 4 variables. The proposed model path diagram focused on direct relationship between dependent variable and independent variables. The key structural model in Figure 116 below shows that Biodegradable Materials (BM) as the dependent variable which is directly related to 3 other structural models, also known as independent variables such as Concept of Decorative Items (CODI), Application of Decorative Items (AODI) and Design Model

(DM). In this study, classifications are used to represent the exogenous variables observed variables during the process of analysing data.

Biodegradable Materials (BM): In the path diagram, the development is an unobserved and exogenous variable that consisted of 3-Dimension variables such as Concept of Decorative Items (CODI), Application of Decorative Items (AODI) and Design Model (DM). Concept of Decorative Items (CODI): In the path diagram, the development is an unobserved and exogenous variable that consisted of 5 observable items such as CODI1, CODI2, CODI3, CODI4 and CODI5. Application of Decorative Items (AODI): In the path diagram, the development is an unobserved and exogenous variable that consisted of 5 observable items such as AODI1, AODI2, AODI3, AODI4 and AODI5, Design Model (DM): In the path diagram, the development is DM2, DM3, DM4 and DM5.

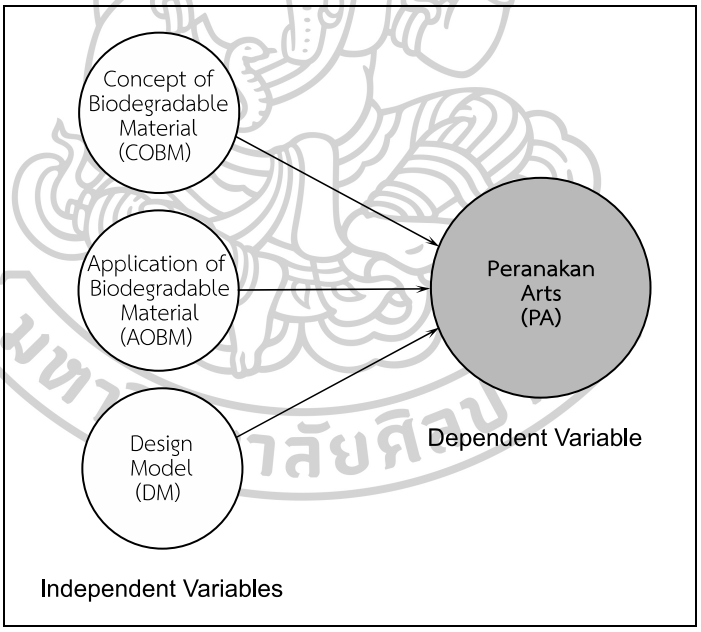

Figure 116 Research Model

4.4 Normality Test

The Smart PLS does not require normality assumptions and manages non-normal distributions relatively well. PLS professes opportunities and challenges for mediation effects of the study, thus making it suitable for mediation purpose. The

mediation effects are the outcome of 2 relationships between dependent variable and independent variable.

In this study, as shown in Table 31 below that the 27 variables of the questionnaire that were tested at univariate level. It shows none produces skewness greater than 3 and kurtosis greater than 10 respectively. The results of the survey were gauged by using Likert Scale with the range of 1 to 5 (SD= Strongly Disagree, D= Disagree, N= Neutral, A= Agree, SA= Strongly Disagree).

Table 31 Data Normality Test

	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Std. Error	Statistic	Std. Error
Site	2.874	.005	.122	-1.221	.244
Gender	.500	-.132	.123	-1.993	.245
Ethnic	.836	.857	.122	-.510	.244
Age	.845	.533	.122	-.768	.244
Marital	.471	.726	.122	-1.480	.244
Education	.860	-.262	.122	-.514	.244
Occupation	2.401	-.081	.122	-1.525	.244
Distance	.671	-.733	.122	-.571	.244
Times	.624	.236	.122	-.618	.244
Spending	.579	.789	.122	-.366	.244
Packaging	.822	-.471	.123	-1.363	.245
C11	.563	-.881	.123	-.241	.245
C12	.599	-.429	.123	.149	.245
C13	.624	-.686	.123	.134	.245
C14	.678	-.577	.123	.530	.245
C15	.674	-.399	.123	-.807	.245
C16	.619	-.279	.123	-.278	.245
C17	.637	-.470	.123	1.209	.245
C18	.595	-.154	.123	-.522	.245
C19	.712	-.492	.123	-.452	.245
C20	.893	-.828	.123	.623	.245
C21	.840	-.575	.123	.083	.245

C22	.576	-.199	.123	.479	.245
C23	.698	-.384	.123	-.027	.245
C24	.664	-.493	.123	-.738	.245
C25	.565	-.082	.123	.171	.245
C26	.716	-.811	.123	1.102	.245
C27	.613	-.271	.123	.115	.245

4.5 Discriminant Validity

The full hypothesized model of this research is shown in Figure 117 below. Based on the hypothesized model, CODI to BM, AODI to BM and DM to BM was found not significant with regards to the t-value in Table 32 below shows where the path loading is 0.257, 0.169 and 0.269 respectively based on Figure 118 below. As shown in Table 33 below that Hypothesis Model Construct Reliability and Validity Matrix also shows that all the Average Variance Extract of Constructs such as Concept of Decorative Items, Design Model, Application of Decorative Items and Biodegradable are all above 0.5, that indicate that the Convergent Validity are met.

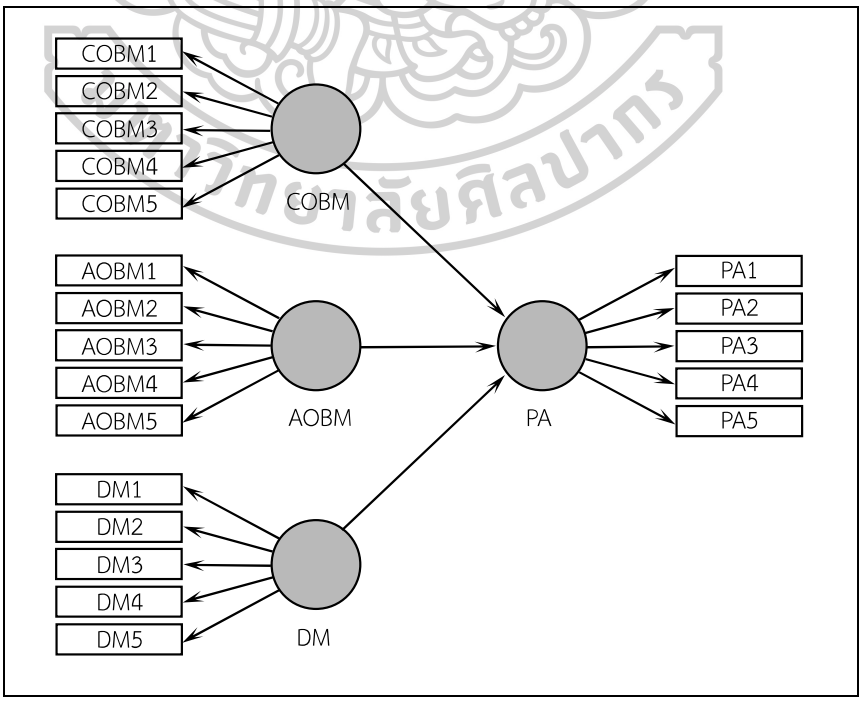

Figure 117 Hypothesis Model

Table 32 t-Statistics Hypothesis Model

Path	t-value
COBM-> PA	5.785
AOBM -> PA	3.509
DM -> PA	5.564

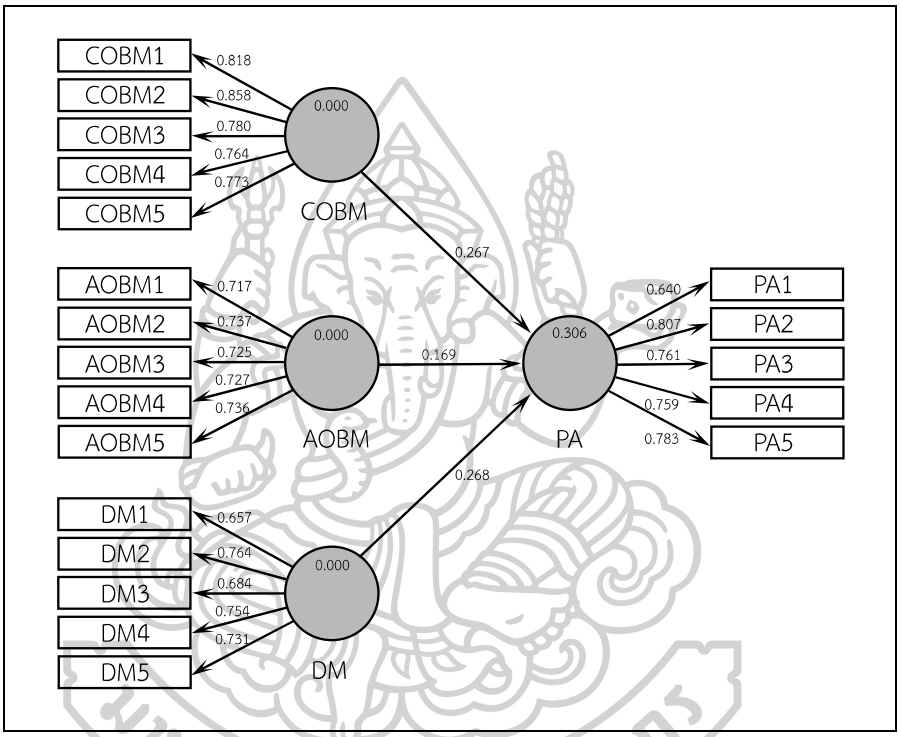

Figure 118 Hypothesized Model Path Coefficient

Table 33 Hypothesis Model Construct Reliability and Validity Matrix

	AVE	AVE Sqrt	Composite Reliability	R Square	Cronbach's Alpha	Communality
Concept of Biodegradable Material	0.659	0.812	0.906	0.000	0.870	0.659
Design Model	0.523	0.723	0.845	0.000	0.772	0.523
Application of Biodegradable Material	0.529	0.727	0.849	0.000	0.779	0.529

Peranakan Arts	0.574	0.757	0.870	0.306	0.814	0.574

Table 34 below shows a different data set comparing each item correlations to its intended construct which is loading and to all other constructs which is cross loadings, shown on Table 35 below. At this juncture, it is important to note that while the discriminant validity based on correlations can be easily determined; this is not necessarily always happening. In circumstances where the cross loadings seem to be quite close in magnitude to the item loading, it may need to square all the loadings and cross loadings. In fact, while the current practice among researchers is to show loadings and cross loadings, we can argue that showing the square of the loadings and cross loadings is more insightful.

Besides discriminant validity, one also requires to assess convergent validity which is described as the degree to which items blocks strongly agree which are converging in their underlying construct representation they were generated to gauge. Therefore, how large is each of the loadings and are they approximately the same? If measures that are mixed and have a broad range for example different from 0.5 to 0.9, this would raise question about whether measures are truly a homogenous set that primarily captures the interest phenomenon. However, with both a higher average loadings and narrower range such as from 0.7 to 0.9, it shows the present of greater confidence that all items help (i.e., converge) in approximating the underlying construct. Although there is no set range or minimum, the slimmer the range and greater the lowest loading is the more can be assumed convergent validity.

After ascertained measures suitability, the following step is to demonstrate evidence to support the theoretical model as demonstrated by the structural portion of the model. In earlier discussion, the focus in PLS analysis is on variance explained as well as ascertaining all path estimates significance. Particularly, the structural model predictive power is evaluated by the R^2 values of the endogenous variables. PLS R^2 results stand for the amount variance in the construct in question that is explicated by the model. Therefore, for a given PLS model, initial step can be done by looking at the R-squares for each dependent LV in the structural model provided by PLS. This is achieved because the case values of the LVs are decided by the

weight relations. The equivalent standardized path estimates can also be assessed and construed in the same way. Eventually, the change in R-squares can be investigated to see whether the impact of a specific independent LV on a dependent LV has effective impact. The effect size f^2 can be calculated as $f^2 = (R^2_{included} - R^2_{excluded})/(1 - R^2_{included})$, where $R^2_{included}$ and $R^2_{excluded}$ are the R-squares obtained from the dependent LV when the predictor LV is used or omitted in the structural equation respectively.

Table 34 Correlation Coefficient Model

	COBM	DM	AOBM	PA
COBM	0.812			
DM	0.3893	0.723		
AOBM	0.5057	0.4638	0.727	
PA	0.4464	0.4469	0.4231	0.757

Table 35 Cross Loading Model

	CODI	DM	AODI	BM
COBM1	0.818	0.365	0.425	0.423
COBM2	0.896	0.368	0.462	0.417
COBM3	0.779	0.269	0.386	0.308
COBM4	0.784	0.296	0.368	0.298
COBM5	0.773	0.259	0.399	0.333
DM1	0.238	0.657	0.254	0.303
DM2	0.294	0.784	0.305	0.380
DM3	0.284	0.684	0.374	0.252
DM4	0.291	0.754	0.412	0.332
DM5	0.303	0.731	0.346	0.330
AOBM1	0.399	0.369	0.717	0.322
AOBM2	0.356	0.364	0.737	0.282
AOBM3	0.359	0.374	0.725	0.272
AOBM4	0.355	0.266	0.727	0.275
AOBM5	0.364	0.315	0.730	0.366
PA1	0.255	0.253	0.228	0.668

PA2	0.368	0.369	0.306	0.807
PA3	0.292	0.322	0.311	0.761
PA4	0.322	0.362	0.368	0.759
PA5	0.424	0.366	0.365	0.783

4.6 Hypothesis Testing

To test the structural model that has been developed, first the direct relationship from the model in Figure 119 below is performed. The model shows the direct relationship of independent latent variables with dependent variables. There are 3 direct relationships drawn from the model. There are the Concept of Biodegradable Material (COBM) to Peranakan Arts (PA), Application of Biodegradable Material (AOBM) to Peranakan Arts (PA) and Design Model (DM) to Peranakan Arts (PA).

The first relationship study under the model in Figure 119 below, is between Biodegradable Material (COBM) to Peranakan Arts (PA). Concept of Biodegradable Material (COBM) to Peranakan Arts (PA) is 0.257 with the t-value of 5.785 as shown in Table 36 below, which is significant at $p<0.05$ and the f^2 is 0.068. This positive and significant relationship between Concept of Biodegradable Material (COBM) to Peranakan Arts (PA).

The second relationship analysed in this model is from Design Model (DM) to Peranakan Arts (PA) in Figure 70 below, where the path coefficient found to be 0.269 with the t-value of 3.509 as shown in Table 34 below, and it is significant at $p<0.05$ and the f^2 is 0.720 which has a significant positive influence. This shows that Design Model (DM) has significant and positive influence on Peranakan Arts (PA).

The third relationship being under study in this model is the relationship between Application of Biodegradable Material (AOBM) to Peranakan Arts (PA) in Figure 70 below. From the analysis, it is found that Application of Biodegradable Material (AOBM) has a positive and significant influence on Peranakan Arts (PA). The path coefficient from Application of Biodegradable Material (AOBM) to Peranakan Arts (PA) is 0.169 with the t-value of 5.564 as shown in Table 34 below, which is significant at $p<0.05$ and the f^2 is 0.027. This shows that Application of Biodegradable Material (AOBM) has significant and positive influence on Peranakan Arts (PA).

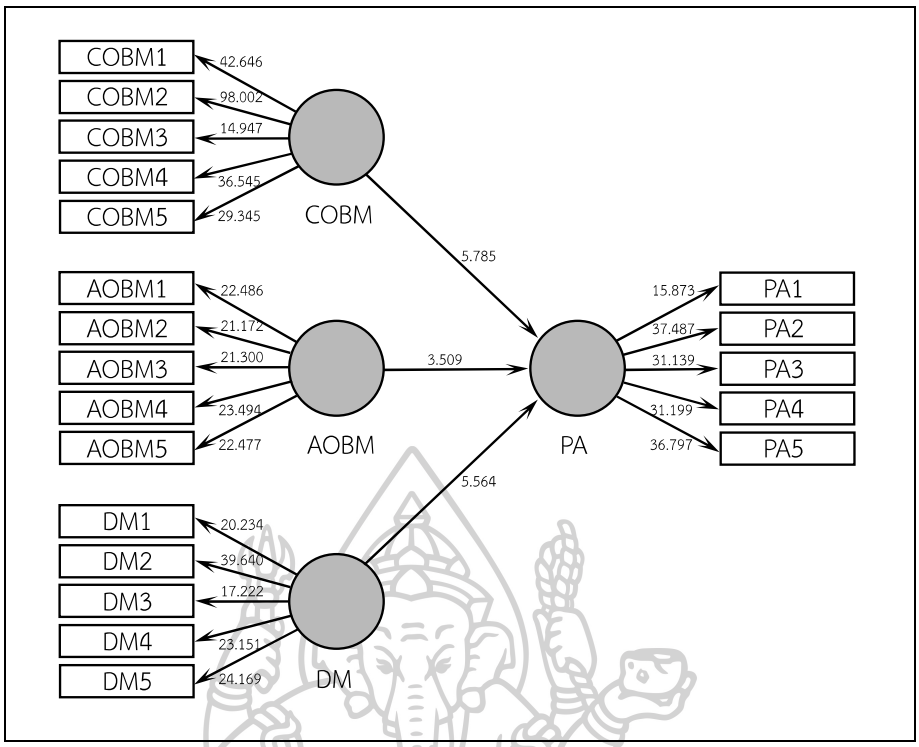

Figure 119 t-Value Model

Table 36 Path Coefficient and t-value Model

	Path Coefficient	t-value	f^2
COBM=> PA	0.257	5.785	0.068
DM => PA	0.269	3.509	0.720
AOBM => PA	0.169	5.564	0.027

4.7 Goodness of Fit

A global criterion of goodness of fit such as the GoF index has been proposed by Tenenhaus (2004). The intent is to account for the PLS model performance at both the measurement and the structural model with a focus on overall prediction performance of the model. The GoF index is obtained through square root of the geometric mean of the average communality index and the average R^2 value. The average of the communality is 0.571 and the average of R-square is 0.076. Then both averages are multiplied and the square root of it gives the GoF figure of 0.209. The GoF which is greater than zero signifies that the model is fit as shown in Table 37 below.

Table 37 Goodness of Fit Model

Constructs	Communality	R-square
COBM	0.659	
DM	0.523	
AOBM	0.529	
PA	0.574	0.306
Average	0.571	0.076
Goodness of Fit (GoF)	0.209	

4.8 Summary

The main purpose of this chapter is to conduct the analysis and interpret the data acquired from the survey and provide support in accomplishing the objectives that is desired in this study. In this chapter, the research design for this study works in the quantitative research direction through survey design that focuses on social survey research method. The research instrument selected was structured questionnaires designed with using the Likert Scale and was employed through simple random sampling method, which was used in both pilot test and field survey. The Simple Random Sampling method was used to evaluate the perception of the respondents within the population. The Klang Valley is selected for sampling due to its commercial potential, here 5 locations (Kuala Lumpur, Petaling Jaya, Subang Jaya, Shah Alam and Klang) consisting of 10 survey sites are shortlisted; Tesco and Giant hypermarkets. The consumers of these hypermarkets were the survey respondents. The population of the Klang Valley is 4,196,391 thus the required sample size is 384 at 5% margin error.

Procedures and methods utilized in this chapter intended to give very clear view how the constructs of interest development would be evaluated and its applicability for each of the analysis stage. The demographic variables were analysed to study the background of the respondents. The total of 3 hypotheses were tested by employing the structural equation model and were receiving a tremendous support from the analysis as shown in Table 35 above. The outcome of the hypotheses shows positive and significant on relationships and results as shown in

Table 38 below. Additionally, further analysis of the final research model has revealed that the proposed decorative items made from biodegradable materials are the good model that has ability to give explanation on the factors that have influence on hypermarket consumer in Malaysia biodegradable materials industry.

Table 38 Summary of Quantitative Findings

Relationships	Results
H1: There is a positive and significant relationship between the Concept of Biodegradable Material and Peranakan Arts	Supported Concept Biodegradable Material have positive and significant relationship on Peranakan Arts
H2: There is a positive and significant relationship between Application of Biodegradable Material and Peranakan Arts	Supported Application of Biodegradable Material have positive and significant relationship on Peranakan Arts
H3: There is a positive and significant relationship between the Design Model and Peranakan Arts	Supported Design Model has a positive and significant relationship on Peranakan Arts

Part 2

4.9 Qualitative

This section provides the findings of the interviews from the groups of designers and experts. The purpose of this chapter is to identify perception, acceptance and recommendation of using biodegradable materials on decorative items. In total were 6 designers and 6 experts participated in the personal interviews. Respondents in the designer group ranged from graphic designers, visual communication designers and product designers. Where else, the experts were the selected individuals from research and green product related fields. They were approached for interviews for more detail information and opinions.

4.9.1 The Designer Group

In this section, the designers interviewed were mostly involved in creative works ranging from promotional, packaging, 3D visuals, publication and consumer products. All of them have worked with materials such as paper, metal, cloth and plastic, but not all have experienced working with biodegradable materials.

4.9.1.1 Decorative Items Made from Biodegradable Materials are Important

All of the respondents felt using green material is important as it is a better option for the health of the environment and society.

4.9.1.2 Biodegradable Decorative Items Can Improve Lifestyle

Majority of the respondents agreed to this statement as the goodness of the biodegradable materials should be applied on variances of decorative items.

4.9.1.3 Biodegradable Materials are Ideal Substitute to Existing Materials

Majority of the respondents agreed to using biodegradable materials as the ideal substitute to existing materials.

4.9.1.4 The Commercial Market is Ready for Biodegradable Decorative Items

All of the respondents agreed that the market is ready to accept the biodegradable decorative items.

4.9.1.5 Expectation on the Biodegradable Decorative Items

All of the respondents expected the biodegradable materials to cost lower.

4.9.1.6 Application of Biodegradable Materials on Decorative Items

Majority of the respondents thinks that decoration segment provides a big arts and crafts market.

4.9.1.7 Suggestions of Design Elements for the Biodegradable Decorative Items

All of the respondents viewed that biodegradable materials are suitable for decorative items as there are plenty of technical applications available to support on the aesthetic areas such as colours, shapes and finishing.

4.9.1.8 View on Functional Biodegradable Decorative Items

All of the respondents viewed that, the functional design could be incorporated into biodegradable decorative items which provides better value to consumers.

4.9.1.9 Support from the Government and Non-government Organizations on Consumers' Preference in using biodegradable decorative items

All of the respondents agreed to the idea of the government and non-government organization should provide support on consumers' preference in biodegradable decorative items.

4.9.1.10 Other Comments and Recommendations

Majority of the respondents were concerned over the trueness of the biodegradable materials, as some materials claimed but took long time to breakdown.

4.9.2 The Expert Group

In this section, the 6 respondents of experts interviewed were mostly from the background of researchers, product specialists and business owners. All of them have experience working with environment friendly materials.

4.9.2.1 Opinion on Existing Peranakan Arts in the Market

Majority of the respondents mentioned that there are plenty of rooms for heritage decorative items in the market and can be interestingly with new material applications. The current available Peranakan arts are very expensive collectables, even the replicas.

4.9.2.2 Opinion on Peranakan Arts Made from Biodegradable Materials

Majority of the respondents said that it is ideal to look into better options such as biodegradable material which break down safely at day end, but also has to provide safeness and hygiene during lifecycle such as fuel, starch and natural fibre-based materials.

4.9.2.3 The Contribution of Biodegradable Peranakan Arts to the Society, Environment and Economy

All of the respondents believed that the biodegradable Peranakan arts could contribute greatly to the society, environment and economy through heritage revival, healthier lifestyle, eliminate environmental burden, provide new opportunity for tourism.

4.9.2.4 Commercial Potential on Biodegradable Materials

Majority of the respondents believed that the local biodegradable materials will be viable, cheaper and with good support of research and development is able to compete with conventional materials and as well as imported materials.

4.9.2.5 Support from the Government and Non-government Organizations on Consumers Inclination in using Biodegradable Decorative Items in Complying to the Global Trend

All of the respondents viewed that, the support from the government and non-government organizations on consumers' inclination in using biodegradable materials in complying to the global trend is ultimately important. As realising the needs of the global green direction and the effort is lacking, full encouragement and support are needed to achieve objectives of the global standards.

4.9.2.6 Opinion on the Future of Peranakan Arts

All of the respondents were determined that more innovative designs and biodegradable materials will be applied on the future decorative and other items with the support from research and development.

4.9.2.7 Other Comments and Recommendations

All of the respondents stressed on the retail price of biodegradable Peranakan arts when it reached consumers. It will be good if price could be kept at affordable value as an encouragement to consumers, also that the government and non-government organizations could subsidise and sponsor for a start. As the consumers get accustomed to the biodegradable materials, then it can be sold at competitive retail pricing with different options. They commented and believed that, with the values provided and affordability of the biodegradable items can drive the customers towards green consumerism and tourism as well.

4.10 Findings

In this section, the information provided to identify on the research concept, application and design were summarised in the form of bar charts. The charts comprised of both of the quantitative and qualitative researches in which were examined in responding to the research questions of this research with the objective of contributing knowledge in the area of using biodegradable materials onto designing decorative items. The findings achieved are important as

to prove the correlation between biodegradable materials and decorative items, the influence of the biodegradable materials on decorative items and to link the biodegradable materials and decorative items.

4.10.1 Does the Concept of Decorative Items Have a Positive and Significant Influence on Biodegradable Materials?

In the collected data based on survey and interviews have proved that, the concept of decorative items has positive and significant influence on biodegradable materials.

4.10.1.1 Biodegradable Decorative Items are Highly Acceptable

The survey result shows that 84.4% of the consumers find that Biodegradable Decorative Items are highly acceptable. Based on the interviews with the designer group, 100% of the respondents supported that the concept of Biodegradable Decorative Items is important. In the interviews with expert group, 100% the respondents viewed the Biodegradable Decorative Items as important and purposeful.

Figure 120 Biodegradable Decorative Items are Highly Acceptable

4.10.1.2 Biodegradable Decorative Items are Easily Available

The survey result shows that 74.7% of the consumers find that Biodegradable Decorative Items are easily available. Based on the interviews with the designer group, 66.6% of the respondents agreed that Biodegradable Decorative Items is easier to obtained now and getting popular as more retailers are using it on regular basis. In the interviews with expert group, 83.3% of the respondents agreed that Biodegradable Decorative Items are made available to the consumers.

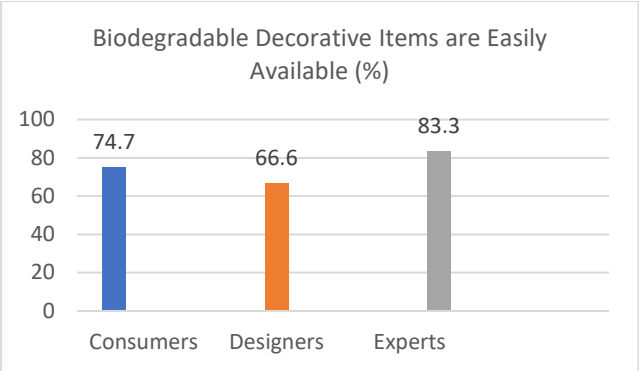

Figure 121 Biodegradable Decorative Items are Easily Available

4.10.1.3 Biodegradable Decorative Items are Affordable

The survey result shows that 73.7% of the consumers find that Biodegradable Decorative Items are affordable. Based on the interviews with the designer group, 50% of the respondents viewed that the Biodegradable Decorative Items are affordable in exchange for better lifestyle and hopefully cheaper in near future. In the interviews with expert group, 83.3% of the respondents agreed that the price of Biodegradable Decorative Items is acceptable.

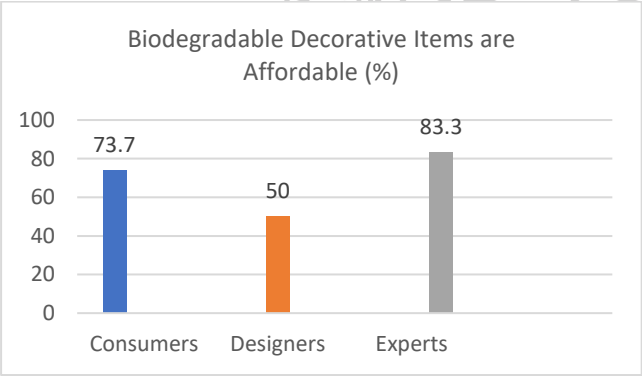

Figure 122 Biodegradable Decorative Items are Affordable

4.10.1.4 Biodegradable Decorative Items Can Save the Environment

The survey result shows that 95.8% of the consumers find that Biodegradable Decorative Items can save the environment. Based on the interviews with the designer group, 83.3% of the respondents felt using Biodegradable Decorative Items on regular basis is a better option for the health of the environment and society. In the interviews with expert group, 100% of the respondents viewed that the Biodegradable Decorative Items on frequent usage can be efficient for the environment.

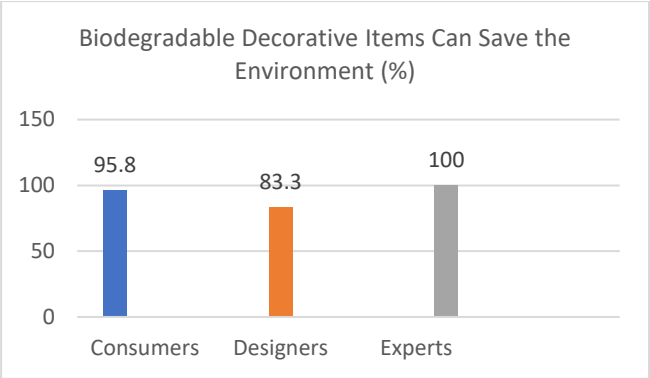

Figure 123 Biodegradable Decorative Items Can Save the Environment

4.10.1.5 Biodegradable Decorative Items Can Solve Waste Disposal Issues

The survey result shows that 92.2% of the consumers find that Biodegradable Decorative Items is solving waste disposal issues. Based on the interviews with the designer group, 83.3% of the respondents agreed that Biodegradable Decorative Items provides good options and solutions to reduce waste issues, eliminate emission of greenhouse gases that improve the lifestyle of society. In the interviews with expert group, 100% of the respondents viewed that the Biodegradable Decorative Items on frequent usage is suitable to control waste issues.

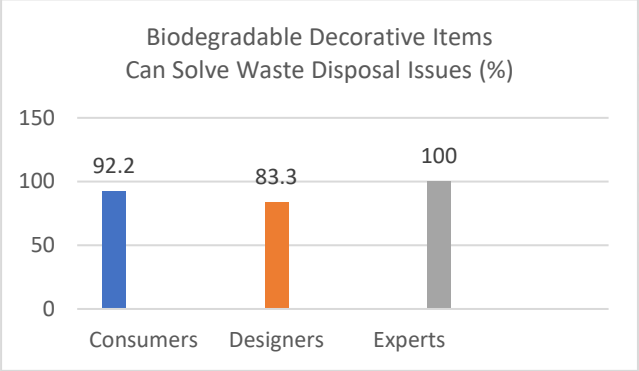

Figure 124 Biodegradable Decorative Items Can Solve Waste Disposal Issues

4.10.1.6 Biodegradable Decorative Items Can Improve Lifestyle

The survey result shows that 93.2% of the consumers find that Biodegradable Decorative Items can improve lifestyle. Based on the interviews with the designer group, 83.3% of the respondents agreed that the Biodegradable Decorative Items can improve the society's lifestyle. In the interviews with expert group, 100% of the

respondents viewed that the Biodegradable Decorative Items on frequent usage can improve the society's way of life. These results are illustrated in Figure 6.6 below.

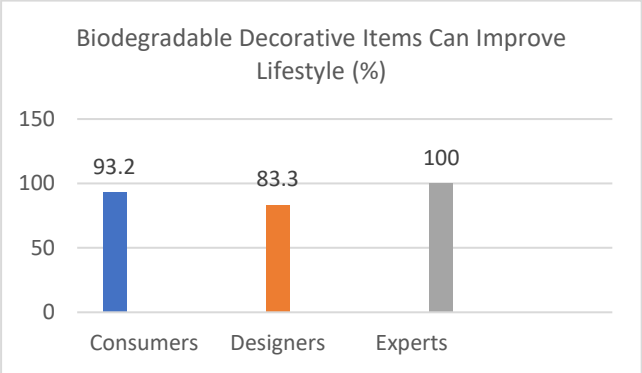

Figure 125 Biodegradable Decorative Items Can Improve Lifestyle

4.10.1.7 Biodegradable Decorative Items on Daily Use Can Reduce Waste

The survey result shows that 92.7% of the consumers find that Biodegradable Decorative Items on daily use can reduce waste. Based on the interviews with the designer group, 66.6% of the respondents agreed that the Biodegradable Decorative Items can eliminate emission of greenhouse gases. In the interviews with expert group, 83.3% of the respondents agreed that.

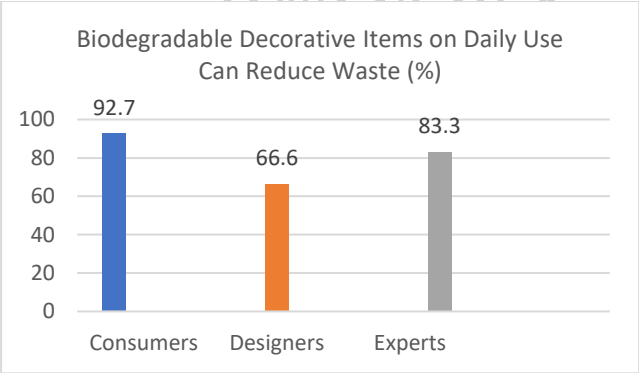

Figure 126 Biodegradable Decorative Items on Daily Use Can Reduce Waste

4.10.1.8 Biodegradable Decorative Items are Beneficial to the Society, Environment and Economy

The survey result shows that 82% of the consumers find that Biodegradable Decorative Items is beneficial to the society, environment and economy. Based on the interviews with the designer group, 83.3% of the respondents also suggested that the

biodegradable material. In the interviews with expert group, 100% of the respondents believe that the Biodegradable Decorative Items could contribute greatly.

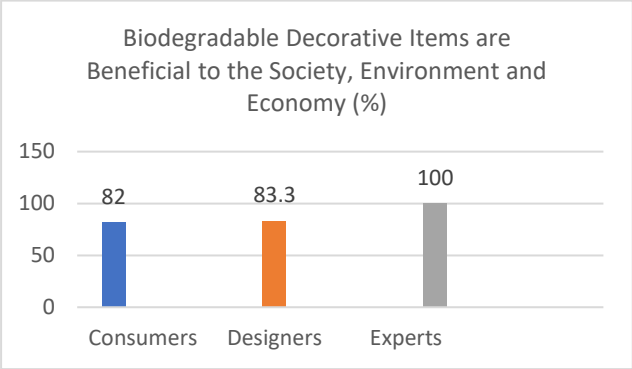

Figure 127 Biodegradable Decorative Items are Beneficial to the Society, Environment and Economy

4.10.2 Does the Application of Decorative Items Has a Positive and Significant Influence on Biodegradable Material?

In the data collected based on survey, interviews and facts from the literatures below have proved that, the application of decorative items has a positive and significant influence on biodegradable material.

4.10.2.1 Biodegradable Material is Better Material Compare to Pulp Paper and Plastic

The survey result shows that 87.2% of the consumers find that biodegradable material is better material compare to paper and plastic. Based on the interviews with the designer group, 83.3% of the respondents agreed to using biodegradable material as the ideal substitute to existing packaging materials. In the expert group, 83.3% of the respondents agreed that, the biodegradable material applied on packaging is viable and able to compete with existing packaging materials.

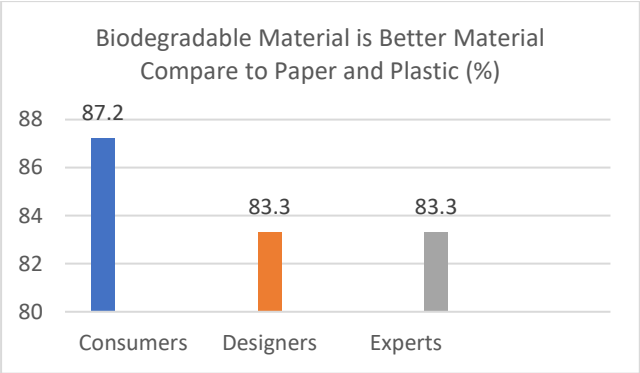

Figure 128 Biodegradable Material is Better Material Compare to Pulp Paper and Plastic

4.10.2.2 Biodegradable Materials are Ideal to Use on Decorative Items

The survey result shows that 87.4% of the consumers find that using biodegradable material on decorative items is ideal. Based on the interviews with the designer group, 100% of the respondents viewed that, the biodegradable material is highly possible to be applied on decorative items. In the expert group, 100% of the respondents viewed that the biodegradable material is a good and important.

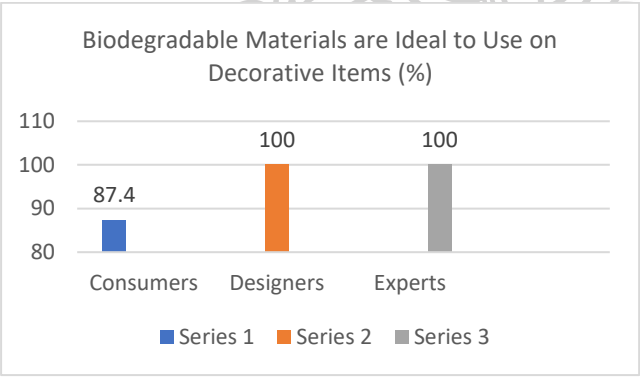

Figure 129 Biodegradable Materials are Ideal to Use on Decorative Items

4.10.2.3 Biodegradable Material Decorative Items Must be Easily Disposed

The survey result shows that 89.9% of the consumers find that biodegradable material decorative items must be easily disposed. Based on the interviews with the designer group, 83.3% the respondents expected the biodegradable material decorative items to breakdown during composting or degradation processes for convenient disposal. In the expert group, 83.3% of the respondents also commented

that the biodegradable material is ideal for decorative items as it is efficient, safe and able to breakdown in a short time which is a solution to disposal issues.

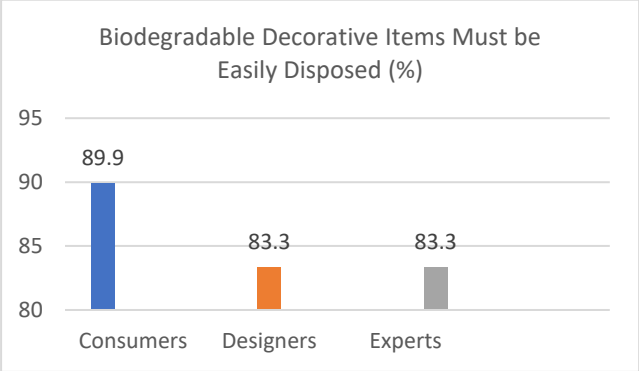

Figure 130 Biodegradable Decorative Items Must be Easily Disposed

4.10.2.4 Biodegradable Decorative Items are Good for Daily Use

The survey result shows that 87% of the consumers find that using biodegradable decorative items is good for daily use. Based on the interviews with the designer group, 66.6% of the respondents agreed that biodegradable material should be applied on decorative items due to its environmental benefits. In the expert group, 83.3% of the respondents agreed that biodegradable decorative items are important in daily use.

Figure 131 Biodegradable Decorative Items are Good for Daily Use

4.10.2.5 Biodegradable Material Must Meet Health and Safety Standards

The survey result shows that 91.2% of the consumers find that biodegradable material must meet Health and Safety Standards. Based on the interviews with the designer group, 83.3% of the respondents stressed on the importance of health and

safety. In the expert group, 100% of the respondents agreed that biodegradable material must provide safeness and hygiene.

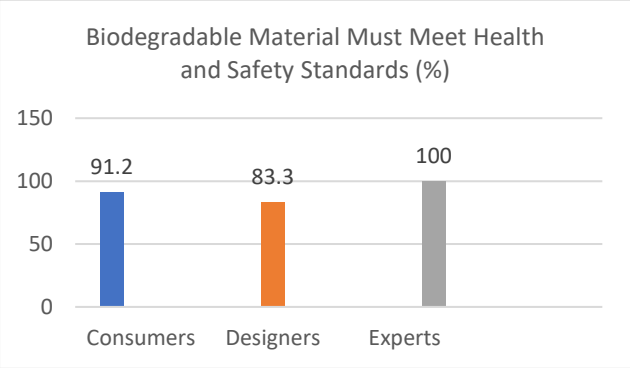

Figure 132 Biodegradable Material Must Meet Health and Safety Standards

4.10.3 Does the Design Model has a Positive and Significant Influence on Peranakan Decorative Items?

In the data collected based on survey, interviews and facts from the literatures below have proved that, the design model has a positive and significant influence on biodegradable material.

4.10.3.1 Peranakan Decorative Items are Functional

The survey result shows that 88% of the consumers find that the design model must be functional. Based on the interviews with the designer group, 100% of the respondents viewed that, the functional design features could be incorporated into Peranakan Decorative Items which provides better value to consumers and brands. In the expert group, 83.3% of the respondents agreed that, functional packaging that provides extra values is growing.

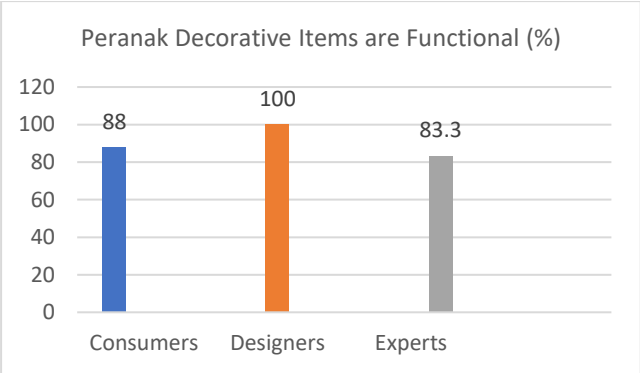

Figure 133 Peranakan Decorative Items are Functional

4.10.3.2 Peranakan Decorative Items are Low in Weight

The survey result shows that 92% of the consumers find that the design model should be low in weight. Based on the interviews with the designer group, 100% of the respondents agreed that, the Peranakan Decorative Items should be light and easy to dispose. In the expert group, 100% of the respondents agreed to that as well.

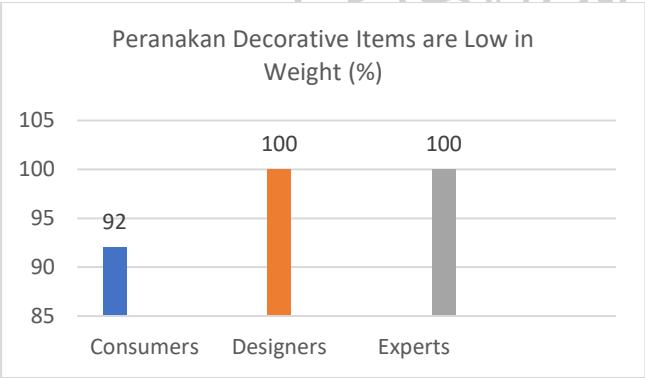

Figure 134 Peranakan Decorative Items are Low in Weight

4.10.3.3 Peranakan Decorative Items are Durable

The survey result shows that 87% of the consumers find that the Peranakan Decorative Items must be durable. Based on the interviews with the designer group, 100% of the respondents viewed that biodegradable material is ideal for durability which could be widely applied to products. In the expert group, 83.3% of the respondents agreed that, the quality of durability is important and needed.

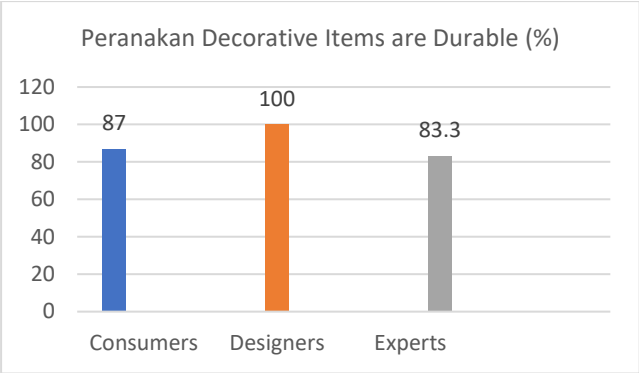

Figure 135 Peranakan Decorative Items are Durable

4.10.3.4 Peranakan Decorative Items are Natural

The survey result shows that 89.2% of the consumers find the Peranakan Decorative Items that is natural looks appealing. Based on the interviews with the designer group, 100% of the respondents agreed that, natural aesthetic of the material sells due to the environmental trend, marketing perception and consumers preference. In the expert group, 83.3% of the respondents viewed that, with increasing cost, advancing trend and awareness of consumers, minimal and natural packaging will be preferred.

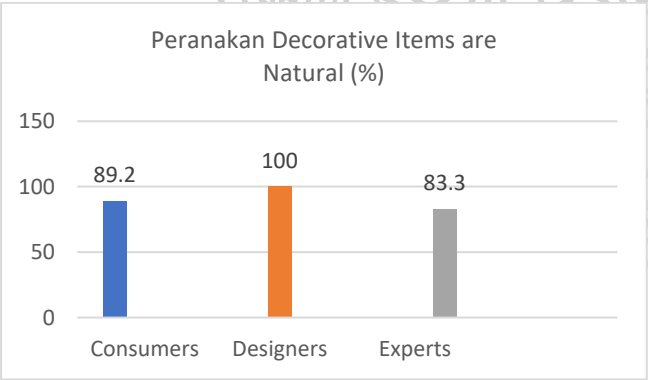

Figure 136 Peranakan Decorative Items are Natural

4.11 Summary

As mentioned earlier, the six respondents of designer group were from the design industry whom are working in the industry and have the experience with different materials in product design. All of them agreed that biodegradable materials are essential in solving environmental issues and affirmed their role in support. Most

of the respondents were fascinated with the idea of biodegradable materials as it has been promising. All of the respondents agreed that the market is ready to accept the biodegradable materials as the society now is aware on the benefits and with the advancement of technologies, this material will be more efficient. All the respondents expected biodegradable materials to be economical, durable and available, to be well received in the local and global market.

In the opinion of the expert group of respondents, all of them viewed that the current biodegradable materials as one of the solutions available in the market are important and useful. The majority of the respondents considered that it is time to look into better alternatives of such biodegradable materials which provide higher efficiency, safer and cleaner. As the materials are limited, therefore they suggested for industry experts to develop and expand on it. All of the respondents viewed this as a good and important alternative for and is suitable replacement for almost all existing plastic items. In all of their opinions, they believed that the biodegradable materials could contribute greatly to the society, environment and economy.

All of the respondents viewed that with the support from the government and non-government organizations on consumers' inclination in using biodegradable materials that complies to the global trend is ultimately important. Positive reaction has to be formed on the supply chain which requires the government and non-government supports as many consumers are moving into sustainable lifestyles.

Part 3

4.12 Design Development

This section of design development shows the process of making conceptual prototypes intended for this research. Comprised of documented fieldwork and experiment result which leads to the development processes. The artist took fieldwork trips of site visit to Peranakan heritage buildings and decorative collections located in the North and South of Malaysia. Next, the material of palm paper is tested on the techniques required for development purpose. The suitable

development techniques are used to construct 2 dimensional artworks to 3D prototypes which are documented in the development process.

4.12.1 Fieldwork

The fieldwork took place at the Straits Settlements of Malaya in Malacca and Penang. Here, the Peranakan lifestyles can be observed through the architecture, interior design, furniture, tiles and fittings. Also, not to forget the collections of jewelleries, attires, Chinese porcelains and most of all the needle works, once crafted by the Nyonya. Here, visual documentation method of photography is employed as to support the primary data collection on creative ideas as well in providing original information.

4.12.1.1 Baba & Nyonya Heritage Museum

The first fieldwork took place with site visit at Baba & Nyonya Heritage Museum in Malacca which is known to be the earliest Straits Settlement of the Peranakan communities. The museum is located at 48-50, Jalan Tun Tan Cheng Lock, Malacca and situated at the World UNESCO heritage area of the old bustling town of Jonker area; one of the best areas to witness nostalgic buildings, antiques and Peranakan cuisine; common popular tourist spot. During 1861 to 1984, this museum which made up of 3 townhouse units was the home of Baba Chan and his family. For four generations of the Chan family lived here until it restored as a museum in 1985. This museum reflects true example of Chinese Palladian style decorated with hand crafted tiles, detail crafted teakwood doors, Greco Roman pillars and a pair of traditional red lanterns presenting the family name and auspicious greeting.

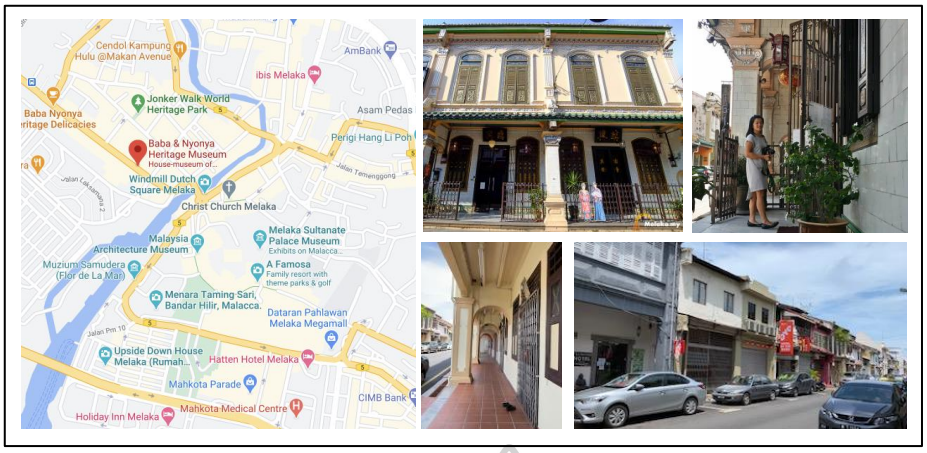

Figure 137 The visit to Baba & Nyonya Heritage Museum (Yeoh, 2019).

Figure 138 Interior of Baba & Nyonya Heritage Museum (Yeoh, 2019).

Figure 139 The Nyonya jewellery collections (Yeoh, 2019).

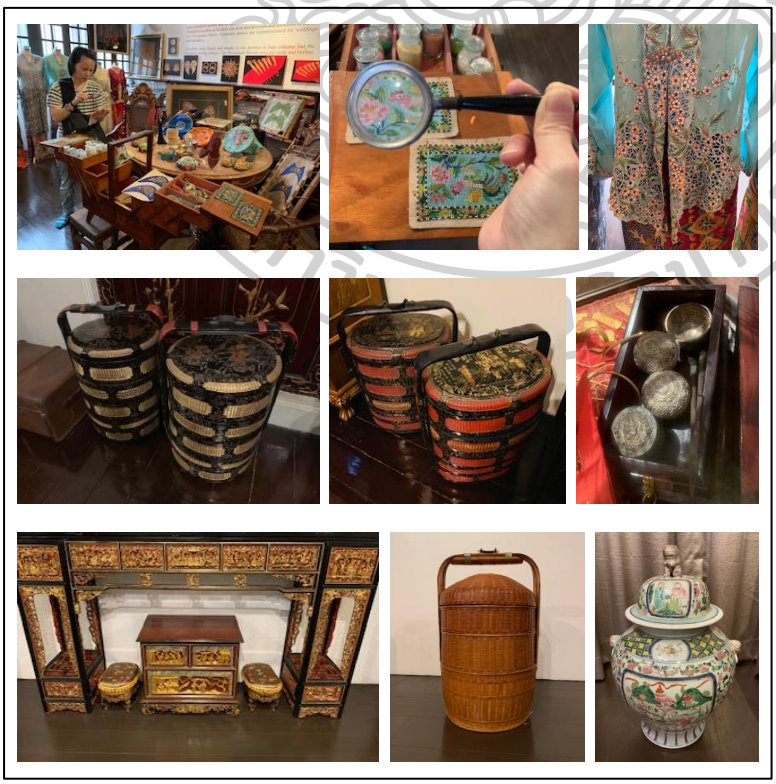

Figure 140 Common Peranakan collections (Yeoh, 2019).

4.12.1.2 Pinang Peranakan Museum

Following fieldwork were to visit the Pinang Peranakan Museum located in George Town, Penang and known as the second Straits Settlements of Malaya. Situated towards the North of Malaysia and 400 kilometres from Kuala Lumpur. The museum is addressed at 29, Church St, George Town, Penang. Built on an old city which now recognised by the World UNESCO was a traditional home to prestigious Kapitan China Chung Keng Kwee in the late 19th century. It offers eclectic styled architecture, ornate carved wood, European tiles, iron works and more than 1000 pieces of heritage collections which reflects the Peranakan's opulent way of life.

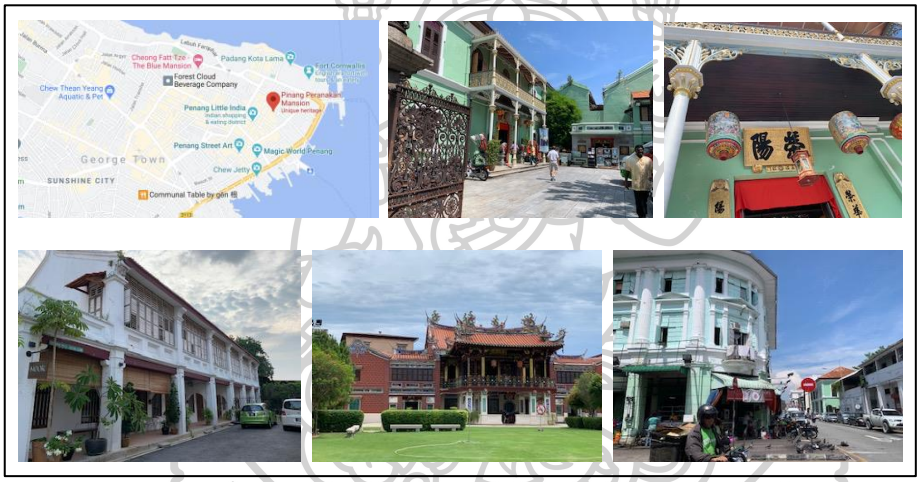

Figure 141 The visit to Pinang Peranakan Museum (Yeoh, 2019).

Figure 142 Interior of Pinang Peranakan Museum (Yeoh, 2019).

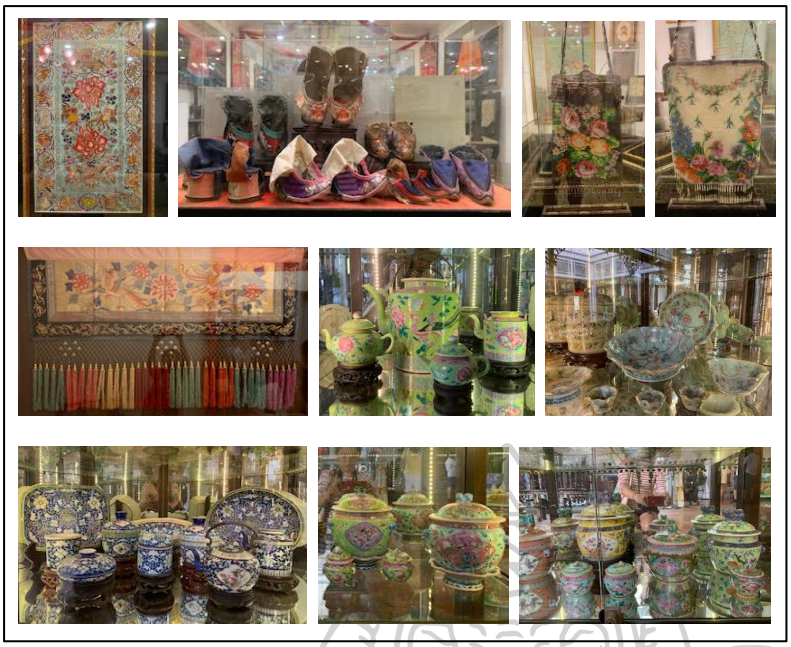

Figure 143 The Nyonya embroidery and porcelainware collections (Yeoh, 2019).

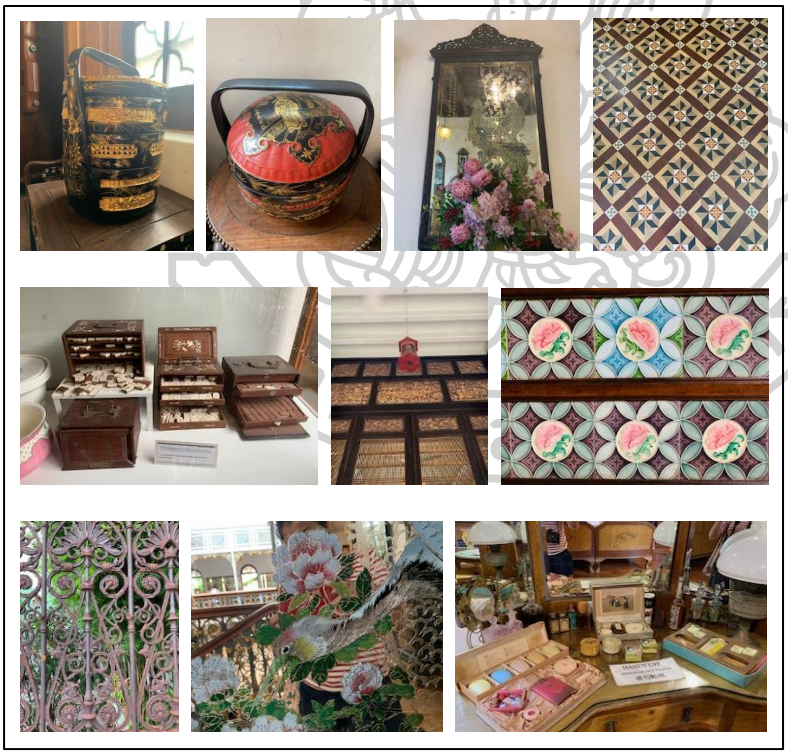

Figure 144 The common Peranakan collections (Yeoh, 2019).

4.12.2 Process Experiment

This section of process experiment is about the application of technical processes onto selected biodegradable material. In this process, the total of 6 types of technique were applied on the 230gsm biodegradable paper board such as cut, fold, colour, emboss, sew and wrap, as shown in Figure 145 to Figure 155 below . This test is important as to prove that the material can be applied onto design of decorative crafting purposes.

4.12.2.1 Technique 1: Cut

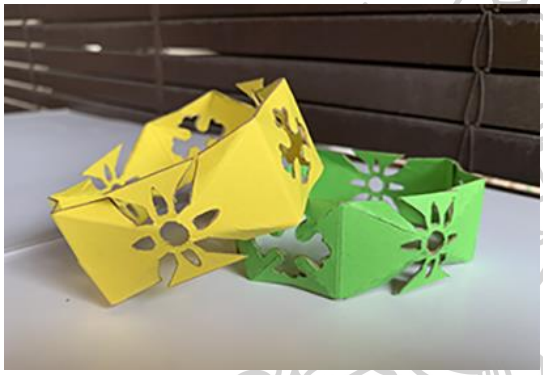

Figure 145 Hand crafted cutting using craft cutter (Yeoh, 2019).

Figure 146 Machine crafted cutting using laser cut (Yeoh, 2019).

4.12.2.2 Technique 2: Fold

Figure 147 Hand crafted folding using bone folder (Yeoh, 2019).

Figure 148 Machine crafted folding using paper folder (Yeoh, 2019).

4.12.2.3 Technique 3: Colour

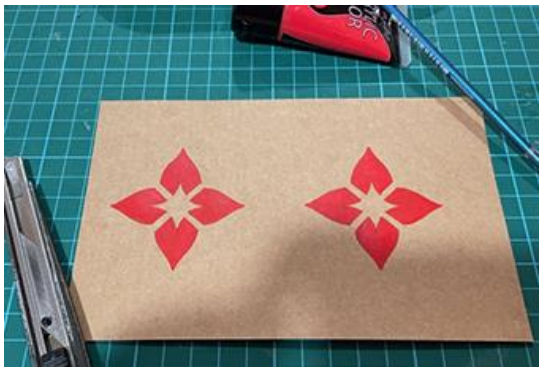

Figure 149 Hand crafted painting using acrylic (Yeoh, 2019).

Figure 150 Machine crafted using laser print (Yeoh, 2019).

4.12.2.4 Technique 4: Emboss

Figure 151 Hand crafted emboss with stencil and stylus (Yeoh, 2019).

Figure 152 Reverse side of emboss (Yeoh, 2019).

Figure 153 Machine crafted using embosser (Publicide, 2020).

4.12.2.5 Technique 5: Sew

Figure 154 Hand crafted sewing using yarn and needle (Yeoh, 2020).

4.12.2.6 Technique 6: Wrap

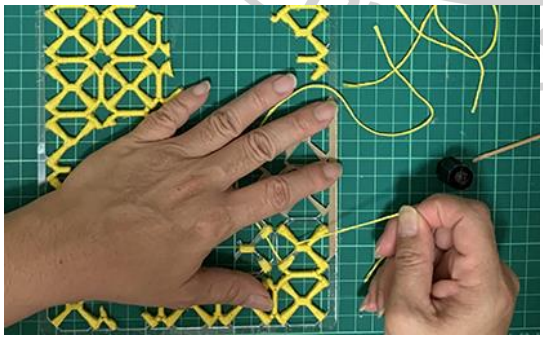

Figure 155 Hand crafted wrapping with yarn (Yeoh, 2020).

Table 39 Comparison Result on Palm Paper Board 230gsm

Technique	Hand Crafted Results	Machine Crafted Results
1. Cut	Tool: Craft Cutter 1) Good on simple and larger motif. 2) Uneven cut at edge and unwanted crease. 3) Require trimming. 3) Time consuming.	Tool: Laser Cut 1) Precise on intricate and small motif. 2) Clean cut. 3) Less time consuming. 4) Require adjustment on beam setting to avoid over burn. 5) Leave carbon stain at cut edge.
2. Fold	Tool: Bone Folder 1) Efficient crease with ability to retain shape. 2) Inconsistent crease and tension. 3) Time consuming.	Tool: Paper Folder 1) Provide sharp and consistent crease. 2) Able to retain shape even with higher density paper. 3) Less time consuming.
3. Colour	Tool: Acrylic 1) High absorbency. 2) Uneven application. 3) Time consuming on application and drying.	Tool: Laser Print 1) Good retainment of pigment. 2) Less time consuming. 3) Ideal even on detail and fine print of motif and text.
4. Emboss	Tool: Stencil and Stylus 1) Limit raised level. 2) Visually clear. 3) Good on simple motifs.	Tool: Embosser 1) Provide sharp detail and small motifs. 2) Visually clear. 3) Less time consuming.
5. Sew	Tool: Yarn and Needle 1) High perforation. 2) Paper tear. 3) Time consuming. 4) Low density of yarn.	*no application of sewing yet for paper; only embroidery on textile.
6. Wrap	Tool: Yarn and Glue 1) Rough and uneven finishing. 2) Time consuming. 3) High and uneven tension.	*not applicable on paper yet for; only for large structured items.

4.12.1 Development Process

The development process here described the construction of each design prototypes; O Pao, Gelang, Patong, Tengkat and Api. Techniques employed were tested in the process experiment on the same type of palm paper used to build the prototypes. Other materials such as acrylic sheets and coloured papers were used to enhanced the details such as motifs and colours.

4.12.1.1 O Pao

Concept: Using cut lace and batik sarong to create Nyonya inspired handbags, as shown in Figure 156 below.

Significance: The O Pao is known as the most used carry wear of the Nyonya to complete their attires which adopted from the European.

Technique: Concept of the O Pao was prepared digitally on 2D format with scanning and technical measurements. The artworks were printed digitally. Followed with cut and fold techniques using technical marks. The edges of O Pao were secured with glue, as shown in Figure 157 below.

Figure 156 Series of O Pao (Yeoh, 2020).

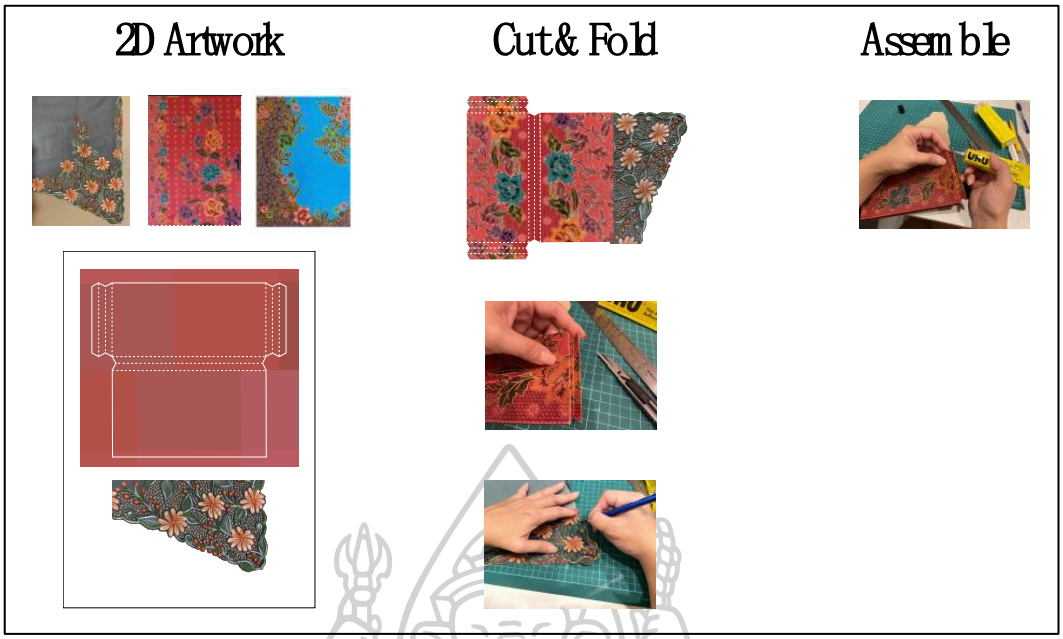

Figure 157 Development Process of O Pao (Yeoh, 2020).

4.12.1.2 Gelang

Concept: Using Peranakan auspicious motifs and colours to develop bangles, as shown in Figure 158 below.

Significance: The Gelang is known as common but important to the Nyonya, in precious metal embedded with precious stones. Carries meaningful auspicious motifs and colours. It connotes prosperity, pass on as heirloom and wedding gift.

Technique: Concept of the Gelang was prepared digitally on 2D format with technical measurements for laser cut. The cut artworks were either coated with acrylic colour or inlaid with coloured sheets using glue. Upon drying, followed with fold techniques using technical marks. Both ends of the Gelang were then secured with glue, as shown in Figure 159 below.

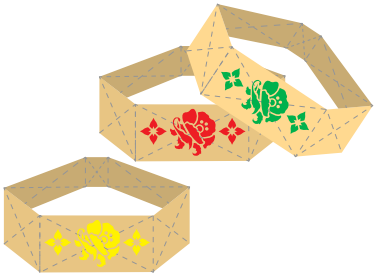

Figure 158 Visual of Gelang (Yeoh, 2020).

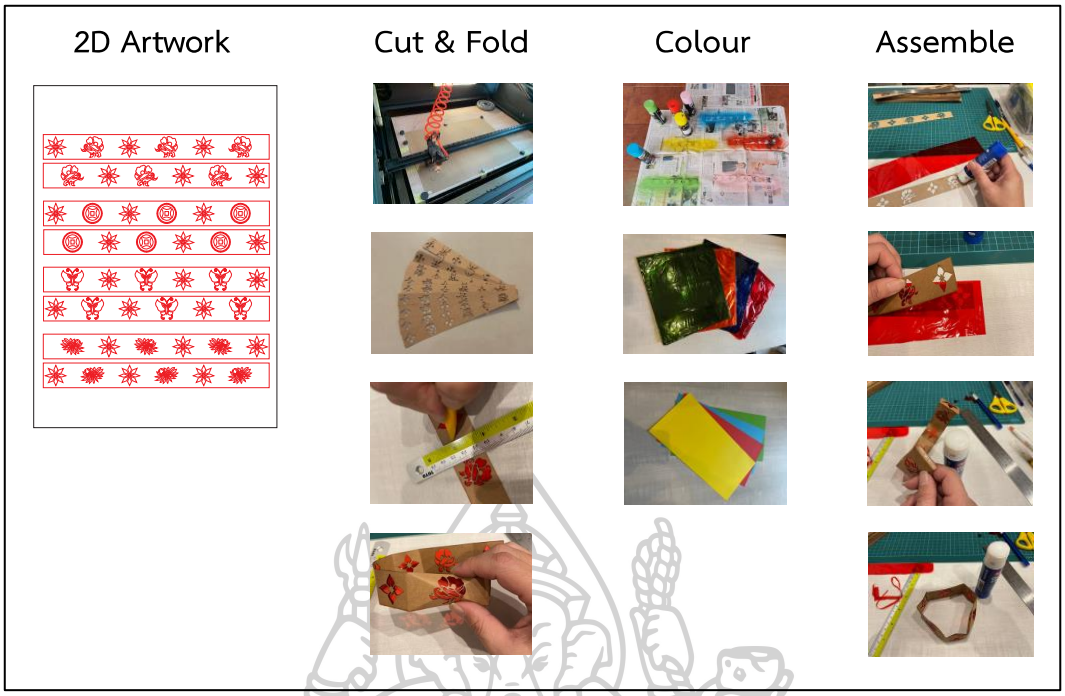

Figure 159 Development Process of Gelang (Yeoh, 2020).

4.12.1.3 Patong

Concept: Using visual identity of Nyonya to create dolls, as shown in Figure 160 below.

Significance: The Nyonya is known as the matriarch of the family, women of tradition, unity and vanity.

Technique: Concept of the Patong was prepared digitally on 2D format through illustration, scanning and technical measurements. Then prepared digital visuals were printed using laser print. Followed by the cut and fold techniques to construct the artwork into 3D format. The assemble of the Patong required glue in securing the connected edges, as shown in Figure 161 below.

Figure 160 Visual of Patong (Yeoh, 2020).

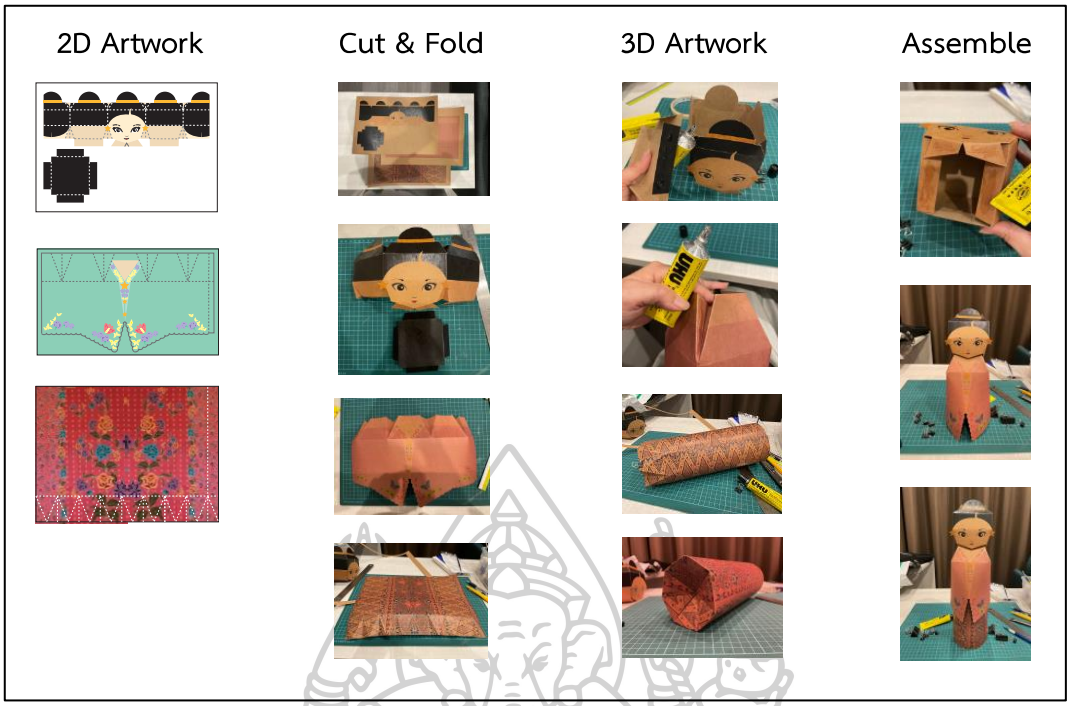

Figure 161 Development Process of Patong (Yeoh, 2020).

4.12.1.4 Tengkat

Concept: Using Peranakan auspicious motifs and colours to develop tiffin, as shown in Figure 162 below.

Significance: The Tengkat was originally designed to contain gifts and food with auspicious meaning of unity, gathering and celebration. Commonly placed on the Tok Panjang in the homes of Peranakan.

Technique: Concept of the Tengkat was prepared digitally on 2D format with technical measurements for laser cut. The cut artworks were inlaid with coloured sheets using glue. Upon drying, followed with fold techniques using technical marks. Both ends of the Tengkat were then secured with glue to form the shape. As for the lid, 2D artwork were prepared with technical marks digitally for laser print. Then fold technique were used to form the lid shape and secured with glue. Next, the small knob was inserted at the top lid area and fastened for attachment. Finally, the base of each tier of the Tengkat were glued with thin stands, as shown in Figure 163 below.

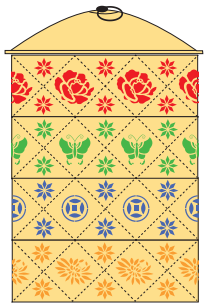

Figure 162 Visual of Tengkat (Yeoh, 2020).

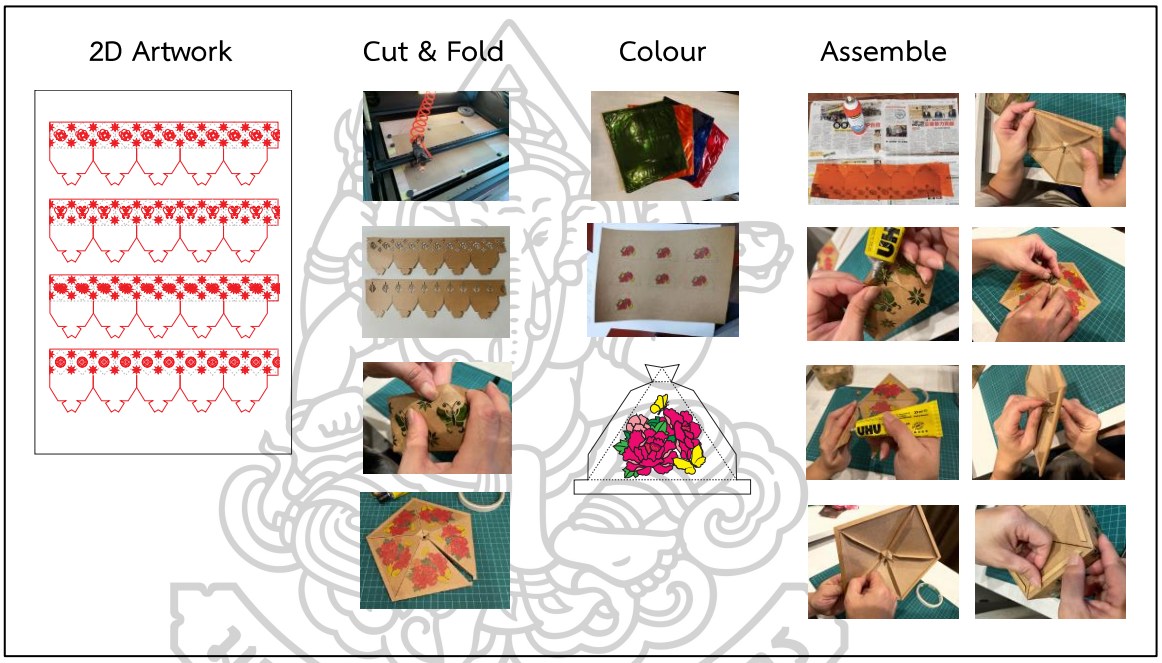

Figure 163 Development Process of Tengkat (Yeoh, 2020).

4.12.1.5 Api

Concept: Using cut work lace and embroidery to create table lamp, as shown in Figure 164 below.

Significance: From candle, oil lamp to electrical lamp, known as Api denotes brightness in religion and sight of the Peranakan.

Technique: Concept of the Api was prepared digitally on 2D format with technical measurements for laser cut. The cut artwork comprised of lace panel, flower motifs and lamp panels. The lace panel and flower motifs were then wrapped with yarn and secured with glue. The lamp panels were assembled using UV light into a stand. Upon drying, the wrapped flower motifs were

attached to the wrapped lace panel. Lastly, the entire wrapped panel was inserted onto the lamp stand, as shown in Figure 165 below.

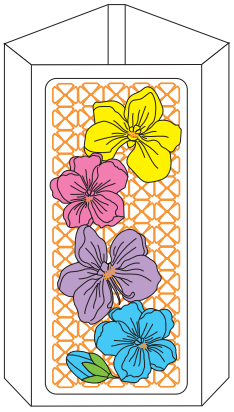

Figure 164 Visual of Api (Yeoh, 2020).

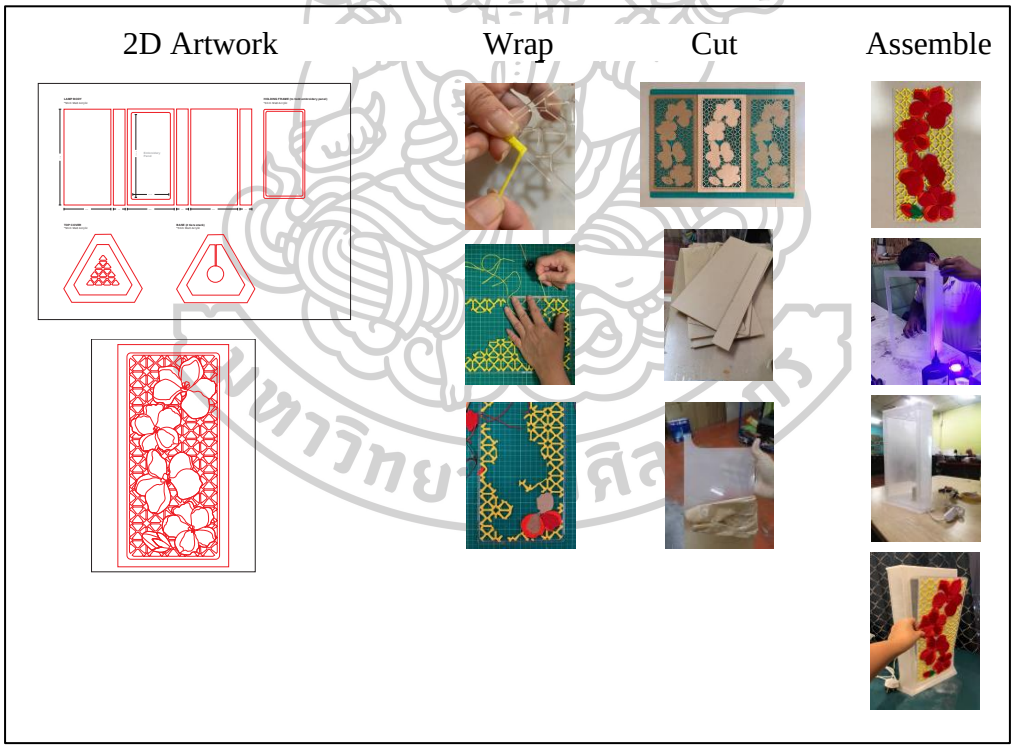

Figure 165 Development Process of Api (Yeoh, 2020).

4.13 Summary

To begin on the design development, field visit research was conducted to strengthen culture and creative understanding. With the findings from the fieldwork, ideas were developed and process experiment was conducted with application techniques on the palm paper. Based on the experiment result from Table 39 above, it shows that the palm paper is tested with hand and machine crafting techniques on cut, fold, colour, emboss, sew and wrap. These techniques have included the use of craft cutter, laser cut, bone folder, paper folder, acrylic, laser print, yarn, needle and glue. Tested techniques are sufficient enough to compliment the conceptual prototypes intended and experiment result has determined that palm paper is viable to be applied for crafting purposes. This is observed in the area of development process which demonstrated the construction steps of conceptual prototypes of O Pao, Gelang, Patong, Tengkat and Api decorative items.

4.14 The Review of Conceptual Design

This research has revived my memories of few on the Peranakan culture but mostly about my late grandmother whom I fondly called Ah Ma, a modern Nyonya but true traditionalist at heart yet appealingly stylish with adornments obscured in her huge Pandora's wardrobe which amusingly filled with collections of o pau (hand bag), kebaya (traditional blouse), sarong (batik cloth), kasut (footwear) and of course her jewelleries, as shown in Figure 166 below. The collections continued at the kitchen with her favourites of porcelain tea set, tengkat (multi-tier food trays), api (lamp), crystal carafe and corning wares. Living in a modern household, Ah Ma fond of using the tengkat for food storage. By lunch of occasions, the colourful tengkat will be placed on the tok panjang (long dining table) filled with her Nyonya cuisine or delicacies. The tengkat signifies union of family; togetherness. Not to forget her liking for oil lamp that she lighted during bedtime which every fortnightly, I would clean, trim the wick and fill up with kerosene.

In this creative section, the crafted works of O Pau, Gelang, Patong, Tengkat and Api are inspiration of my Peranakan background. By combining the culture, hybridity and nostalgic memory, I wanted to bring my rooted values as a Peranakan descendant and reflect the concept on modern items to promote the disappearing arts of our built heritage. These works are mostly hand

crafted, partially assisted by machine crafting through earlier experimented techniques. Each work is crafted with individual Peranakan connotation of flowers and motifs.

1. O Pau known as hand bag, is one of the most used carry wear of the Nyonya influenced by the Europeans to complete their attires, as shown in Figure 167, Figure 168 and Figure 169 below. The traditional O Pau were crafted out of velvet and silk with embroidery or beadwork. As the O Pau represents the vanity of Nyonya, I have used the traditional cut work lace of the kebaya complemented with sarong to express. Red and blue sarongs were used to symbolise prosperity and happiness. Here, I have hand crafted using cut, fold and laser print techniques of the kebaya cut work lace and batik sarong; the combination of both known as kebaya sarong.

2. The primary concept of Gelang arrived during the workshop conducted by Professor Dr. Mark Edgoose of RMIT at Silpakorn University (Wang Tha Phra), it was created on the theory of Constructivism, as shown in Figure 170, Figure 171 and Figure 172 below. I took this research opportunity to expand by providing it with characters. Gelang, bangle is popular among the Nyonya; wore at least a pair and perhaps, the more the better in symbolising opulence, as shown in Figure 173, Figure 174 and Figure 175 below. Most of the Nyonya had personal collections of jewelleries commonly crafted ornately by Sri Lankan artisan in silver and gold embedded with colourful precious stones. Here, I have crafted the Gelang using the hand craft techniques of fold with application of colour and glass paper to represent gem stones. Laser cut technique were used for small motifs and less crease. The Gelang are crafted in the combination motifs of peony, chrysanthemum, bunga siantan, star anise, butterfly and Chinese coin to symbolise distinction, harmony, renewal, love, hope and abundance. The colour used of pink, red, yellow, green and blue are used to signify femininity, prosperity, imperial, youth and happiness.

3. Patong, decorative Nyonya doll in traditional attire of the kebaya sarong that also serve as a container, as shown in Figure 176 below. This is a tribute not only to Ah Ma but also to all the Nyonya; women of tradition, unity and vanity. The attires of kebaya are created with 3 bright colours of pink, green and blue, each connoting femininity, youth and happiness. Dressed with full accessories of earrings, crown, brooches and kebaya decorated with flowers and butterflies symbolised feminine beauty and love. I have created this doll is using hand crafted techniques such as fold and cut, assisted with laser print.

4. Tengkat, the Peranakan tiffin were originally designed to contain gifts and food with primary auspicious connotation of unity, gathering and celebration, as shown in Figure 177 and Figure 178 below. Comes in various sizes and numbers of tiers which could be found in rattan, tin and porcelain. Commonly displayed on the tok panjang with cooked food for family members and guests. The Tengkat is hand crafted with fold techniques and application of glass paper. Each tier of the Tengkat are crafted in different motifs of peony, bunga siantan, star anise, chrysanthemum, butterfly and Chinese coin which connote prosperity, harmony, abundance, cuisine, hope and wealth. The colours of red, yellow, green and blue are used to signify prosperity, imperial, youth and happiness.

5. Api known as flame, was not only important to the Peranakan but also to many Chinese today for the prayer altar, ancestor altar, cooking and at dusk, as shown in Figure 179 below. From the use of candle, oil lamp to electrical lamp, it denotes brightness in religion and sight. The Api is hand crafted with techniques such as wrap, embroidery and assisted with machine craft of laser cut. The idea is adopted from the kebaya cut work laces of peonies, orchids and butterflies which symbolised prosperity, harmony and hope. The colour used of pink, red, yellow and green are used to signify femininity, prosperity, imperial and youth.

Figure 166 Ah Ma in 1987 (Yeoh, 2019).

Figure 167 O Pau 1 (Yeoh, 2019).

Figure 168 O Pau 2 (Yeoh, 2019).

Figure 169 O Pau 3 (Yeoh, 2019).

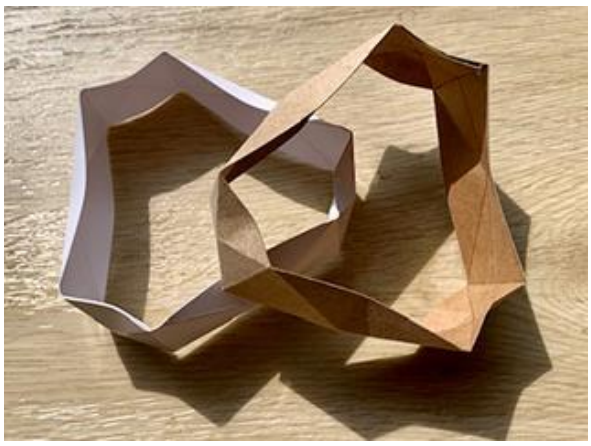

Figure 170 Constructivism Bangle 1 (Yeoh, 2020).

Figure 171 Functional Constructivism Bangle (Yeoh, 2020).

Figure 172 Constructivism Bangle in colours (Yeoh, 2020).

Figure 173 Gelang 1 (Yeoh, 2020).

Figure 174 Gelang 2 (Yeoh, 2020).

Figure 175 Gelang 3 (Yeoh, 2020).

Figure 176 Patong 1 (Yeoh, 2020).

Figure 177 Tengkat 1 (Yeoh, 2020).

Figure 178 Tengkat 2 (Yeoh, 2020).

Figure 179 Api (Yeoh, 2020).

4.15 Conclusion

The results from primary data of quantitative and qualitative research methods which included consumer surveys, designer and expert interviews have determined that the application of biodegradable material is acceptable on decorative items, as shown in Figure 180, Figure 181 and Figure 182 below. With these results, the biodegradable paper of palm pulp is used in process experiment and tested with 6 application techniques such as cut, fold, colour, emboss, sew and wrap. These 6 techniques are further divided into hand and machine crafting for comparison as well as to determine suitable approaches for my conceptual design works.

The suitable techniques of cut, fold, colour, sew and wrap are used to construct the conceptual designs. In detail, hand crafting using craft cutter, bone folder, yarn and glue complimented by machine crafting of laser cut and laser print were applied on the creative works I have in mind. Here, in this research I have created 5 Peranakan decorative items of Patong, O Pau, Gelang, Tengkat and Api using palm paper from the recollection of my childhood memory.

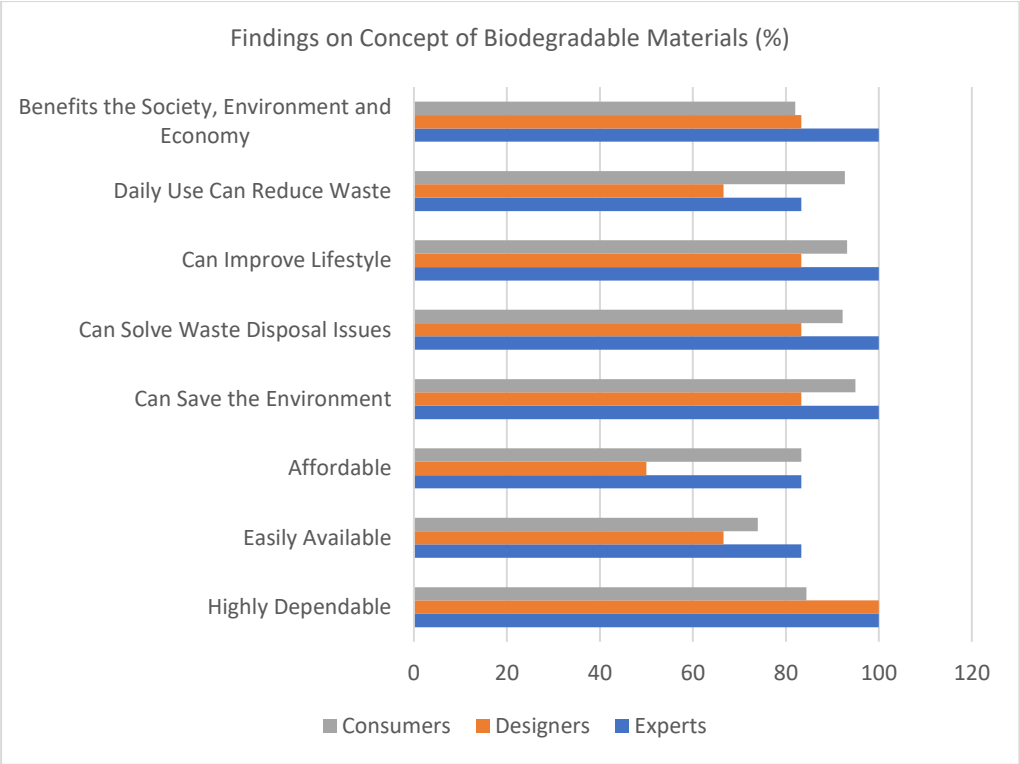

Figure 180 Findings on Concept of Biodegradable Materials

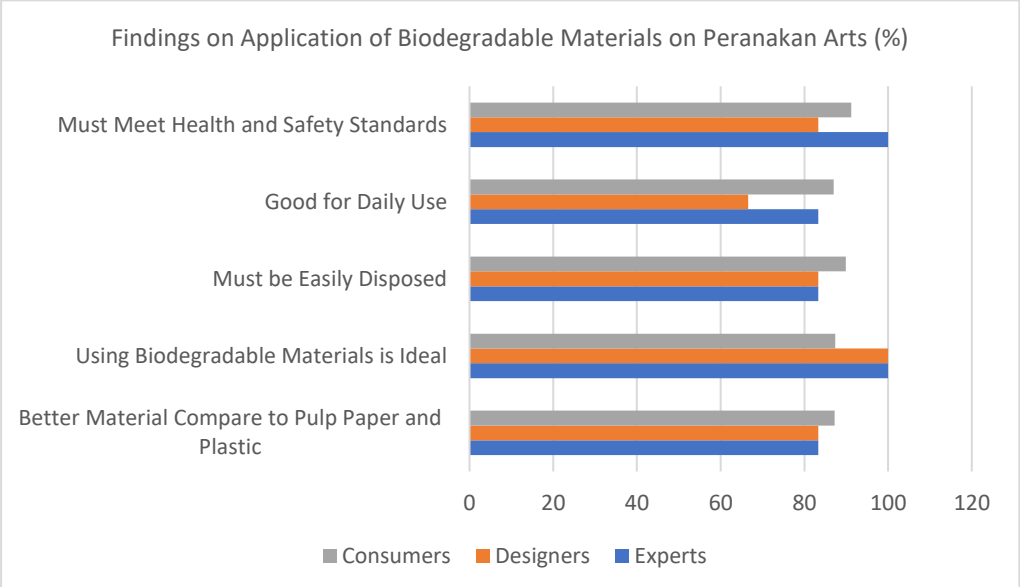

Figure 181 Findings on Application of Biodegradable Materials on Peranakan Arts

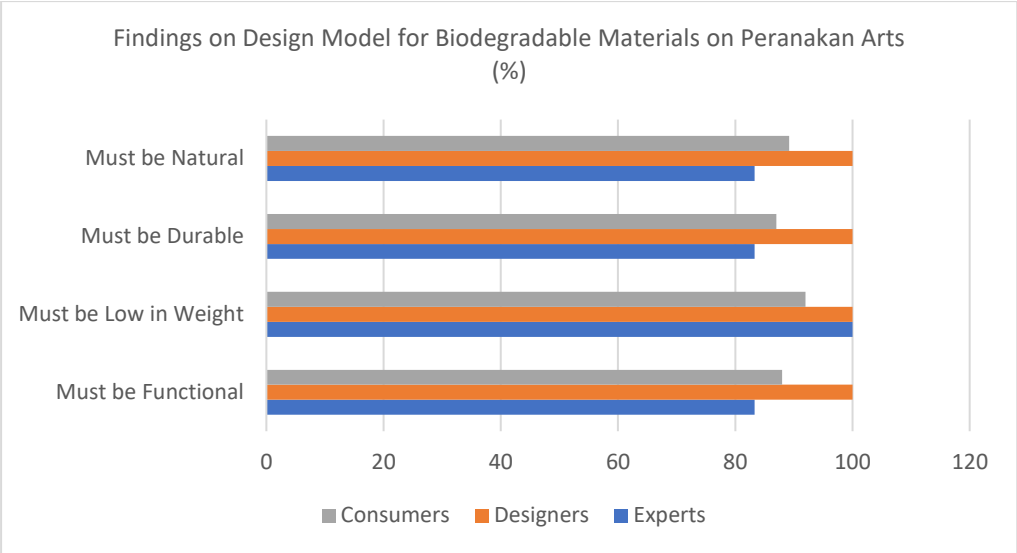

Figure 182 Findings on Design Model for Biodegradable Materials on Peranakan Arts

Chapter 5 Conclusion, Discussion and Recommendation

The objective of this research is developed through the earlier chapters as to understand the Peranakan culture and palm paper, explore perceptions of consumers and perceive opinions of related industry professionals on the crafting of decorative items by using palm paper. In this final chapter of this research, few points are highlighted such as discussion on the contribution and limitation of this research as well as materials recommended for future research.

5.1 Discussion of Research Contribution and Limitation

This research comes with contribution as well the limitation. The contribution of this research pertains the ability of the Peranakan decorative items can reclaim and extend. The research limitation is concerning the influential factors of the areas of primary and secondary data collection.

5.1.1 Research Contribution

1. This research has affirmed that the application of the Peranakan Arts of motifs and colours can be crafted on the palm paper for the purpose of decorative items.

2. The arts and crafts of Peranakan heritage can contribute to domestic social economic benefitting tourism, private stakeholders, local and Peranakan community:

• In tourism, arts and crafts of Peranakan heritage can provide sustainable income through heritage and cultural tourism.

• Private stakeholder such as owners of museums, galleries, arts & craft, retails and specialty cuisine eateries can generate greater revenues.

• As such can provide career opportunities, income and improve life of the employees from local community.

• Able to preserve the built heritage identity of the Peranakan community.

5.1.2 Research Limitation

1. The secondary data which are required mostly for literature review were difficult to obtained due to pricing as most books are rare, foreign publication and many were no longer in publication.

2. Sourcing was difficult and time consuming as most of the books have to be obtained through book collectors of other parts of the country which required travelling time, accommodation and transportation costs.

3. Site visits such as exhibition and heritage venues for photography evidence located at the Straits Settlements required travelling time, entrance fees, accommodation and transportation costs as well.

4. As for the area quantitative research, expenditures are spent on survey questionnaires, travelling and recruitment of survey assistants. Time spent was relatively high as with required travelling on inspection and collection of completed questionnaires.

5. On the qualitative research, costing occurred on phone calls and parking and travelling for interview sessions.

6. Expenditures and time were also spent on material, tools, printing and laser cutting. Certain items and services were unavailable during the period of Covid pandemic.

5.2 Recommendation on Future Research

Although in this research, the collaboration of Peranakan decorative arts with palm paper has provided meaningful denotation towards its heritage, but much more could be done with the advancement of innovation. As the raw materials are getting lesser and costlier, other similar value materials can be used as replacement. Some of the materials available may are yet to be used on crafting but can be tested for relevant applications. Many of the materials produced through local resources are largely untapped which in return could generate great opportunities in the creative field, following are the few available material types worth the attention of artisans.

1. The compressed leaves of betel palm which alike timber available plentiful in the climate of Asia, were mainly used to produce wares for dining, baking and durable packaging.

2.Bamboo and its usages are not new in certain countries, known as a strong and versatile

material. Previously was commonly used for bridges and homes building due to its strength, in recent years the bamboo is used to produce wider range of paper, textile and building materials.

3. The bioplastic is another option with similar features to conventional plastic of polyethylene (PE), polyethylene terephthalate (PET) and polylactic acid (PLA) which able to breakdown safely. This material derived from either petroleum or plants based available in various thickness, flexible and rigid formats which offers the versatility for crafting purposes. Currently, the uses of bioplastic are much applied onto cup, cutlery, bottle, rigid and flexible packaging.

With the use of the materials above in future research in arts and crafts can contribute further on the Peranakan heritage legacy. Realising that the betel palm relates to the favourite pastime of Nyonya in betel nut chewing, the bamboo expresses the cuisine of the Peranakan, the bioplastic of petroleum relates to the maritime trades of the Baba and plants based bioplastic connotes the favoured floral of the Peranakan communities. Besides, these materials are promising with the sustainable trend pushing the boundaries of better products, the concept of natural materials can be expected to flourish in near future.

5.3 Conclusion

The Chinese from Fujian in China arrived at Malacca port of the Straits Settlements in Malay Peninsula centuries ago with trades and hopes. As their trades flourished in the Southeast Asia, many has settled with local women, hence produced the hybrid generations known as Peranakan. With the arrival of the Europeans, of the Straits Settlements were expanded to Penang and Singapore which attributed to the population growth of the Peranakan communities. They were known as trade allies of the Europeans, specifically British due to colonialism. As their affiliations grew, more of later generations lived their lives with western education, pastimes and lifestyles. They were affordable with luxury life contributed by the international trades of maritime transportation, spices trade, tin mining and agriculture plantations. As the Peranakan culture is a known concoction of multicultural background, naturally the Peranakan mimicked many practices from their Chinese patriarchy ancestors, European style they adored and matriarchy root of Malay. This is prominently observed on the motif and colour elements used in the decorative arts of the Peranakan such as embroidery, beadwork, porcelain ware and ceramic

tile. Here, the theory of mimesis is used to describe the Peranakan art which comprises of motifs and colours which they mimicked from the Chinese, European and Malay to be applied on arts they called their own.

As the Peranakan one of the pioneer who ventured into agriculture plantations alongside with the Europeans in Malaya, started with rubber and later oil palm reflects on the use of palm paper on this research. More affirmations and depths were needed to support of this concept with planned research methods. Here, the mix method approaches of quantitative, qualitative and process experiment were applied to verify the possibility of using palm paper to craft decorative arts of the Peranakan heritage. The quantitative and qualitative approaches have determined that the palm paper is accepted and suitable to be applied on decorative items. The process experiment shows that the palm paper is appropriate with satisfactory characteristics to be used for decorative item crafting. In this stage, the comparison of hand and machine crafting shows differences in qualities, although machine crafting can provide speed and precision but creativity and finishing touch are incomparable with hand crafting. Hence, both approaches can be used to complement each other for better results with maintaining the individuality and creativity.

With the affirmation on the design development, the decorative items of Peranakan arts can contribute sustainably to domestic social economic by benefitting tourism, private stakeholders, local and Peranakan community with better opportunities in career and business, providing better earnings, improve the standard of living as well as able to preserve the identity of built heritage of the Peranakan. However, with the sustainable direction, it is essential to consider the use of materials such as betel palm, bamboo and bioplastic as replacement to raw materials are getting lesser and costlier. These materials are available through local resources but largely untapped which in return could offer great opportunities in the creative field.

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