

# The Cultural Identity of Malaysian Housing

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**Abstract** In contemporary housing design, this cultural value has been ignored. Contemporary design has adapted quickly to global trends and houses have gradually lost their cultural identity (GhaffarianHoseini & Dahlan, 2012; Lim, 2001). Nevertheless, traditional housing culture persists in people's behavior and thoughts. Therefore, there is currently a pressing need to rebuild cultural identity in housing for cultural sustainability. This study aimed to analyze the traditional culture which was maintained, then transformed and disappeared in housing design through the quantitative survey and explore the cultural identity of Malaysian housing as a result. A quantitative survey was distributed to mothers of 129 married households living in a metropolitan area of Kuala Lumpur in August 2019. As a result, it was found that hosting guest was important even though the designated space (serambi) was disappeared. The LD/K layout, separating kitchen from living and dining area was philosophical and practical culture, still strong among older generation, but weakened among younger generation. To accommodate the traditional habit of diverse household work, wet kitchen, utility space for washing machine & drying, and outdoor space were needed to design carefully. When applied to future housing design, the findings will contribute to enhancing quality of life by strengthening residents' sense of place and social cohesion and by providing a culturally inherent design that eases the effects of globalization.

*Keywords: Culture, Identity, Malaysia, Housing Behavior*

## 1. INTRODUCTION

Cultural vitality is as essential to a healthy and sustainable society as social equity, economic viability, and environmental responsibility (Hawkes, 2001). To design "good-fit" houses to accommodate local people's needs and lives is important to support the sustainability of society. However, in contemporary housing design, this cultural value has been ignored. Contemporary design has adapted quickly to global trends and houses have gradually lost their cultural identity

(GhaffarianHoseini & Dahlan, 2012; Lim, 2001; Zohri, 2011; Hosseini & Mursib & Nafida & Shahedi, 2012). Nevertheless, traditional housing culture persists in people's behavior and thoughts. Therefore, there is currently a pressing need to rebuild cultural identity in housing for cultural sustainability (GhaffarianHoseini & Dahlan, 2012; Hashim, 2006).

Culture may be defined as a way of thinking by society's people and a lifestyle that is adjusted to a society's physical and social environment (Yang, 2006). Even though this way of thinking is hard to observe directly, it indicates people's values, norms, beliefs, and customs. A culture is also represented through physical products and environments. Housing is perceived as a physical entity, but it is also a social institution and may be understood as a basic cultural phenomenon (Altman & Chemers, 1980). Therefore, housing is socially and culturally enacted (Wilk, 1990, as cited in Kellet, 1999). However, it is impossible to describe a culture and its housing fully because culture is not a straightforward concept, and numerous definitions and interpretations of it exist (Altman & Chemers, 1980). The cultural ideas expressed spatially in a physical form (Kent, 1984). Housing design is a culture-making process, in which ideas, values, norms, and beliefs are spatially and symbolically expressed in the environment to create new cultural forms and meanings (Fernandez, 1986; Low, 1988).

To have a clear understanding of the relationship between

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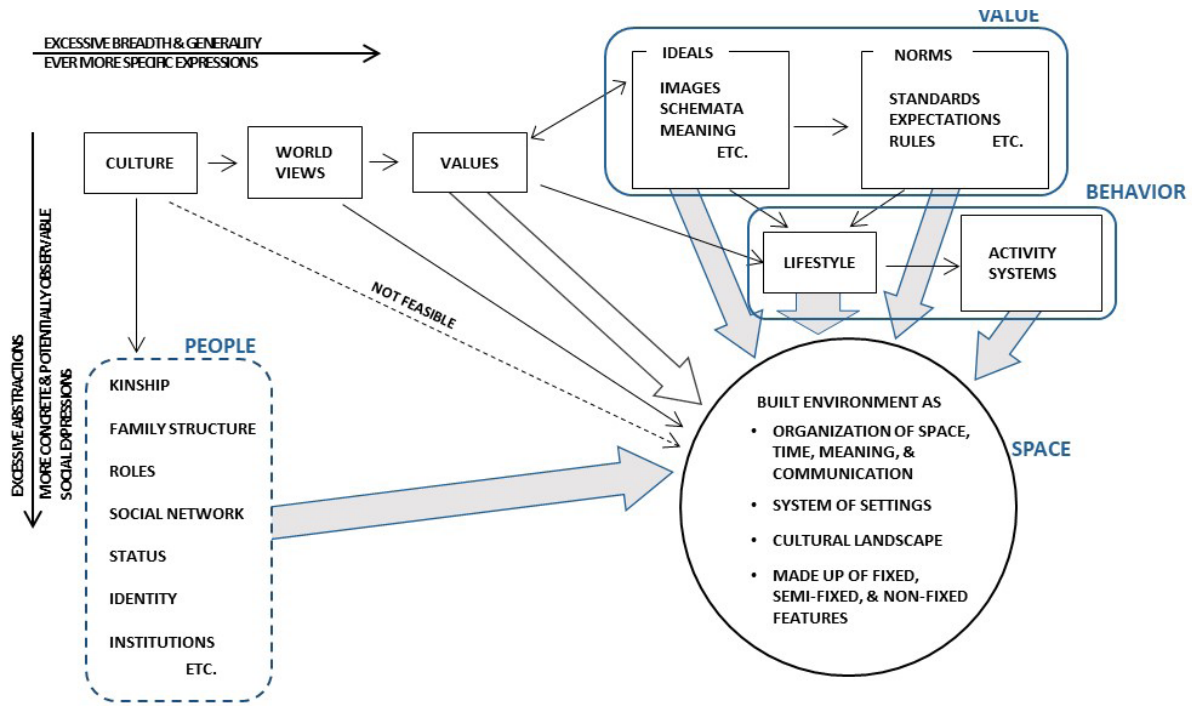


Figure 1. The Framework of the relations between culture and the built environment (revised from Rapoport, 2001:19)

culture and the built environment, Rapoport (2001) provides a framework to demonstrate the relationships between those variables of culture. He describes the variables (attributes) derived from dismantling culture as two dimensions of elements that determine culture: the first is the social dimension, including kinship, family structure, roles, social network, status, identity, and institution and etc., the second is the ideological dimension, encompassing values, ideals, norms, lifestyle and activity<sup>1</sup> [Figure 1]

Values are dismantled as ideals and lifestyle in the framework and ideals are developed into norms and lifestyle is expressed as activity system.

In this framework, the elements with high potential are emphasized by differentiating the thickness of the arrow, such as social elements, value, ideals, norms, lifestyle and activity. As mentioned before, culture is not feasible directly in the built environment and also the relation between values and the built environment is not feasible enough. Therefore, we can understand the relationship between culture and built environment through the relationship between more specific variables such as ideals, norms, lifestyle and activity systems.

In this study, Rapoport's framework was simplified as Fig. 2. based on Rapoport (2001) and Ju and Kim (2014).

In Figure 2, people mean social expression, according to Rapoport's framework of culture, and includes family structure, roles, status, ethnic group, and religion. Values represent the ideological expression of culture, and includes people's

preferences regarding future house characteristics (e.g., location, housing type, size) related to choice and norms. Behavior, which is the most specific expression of culture (Rapoport, 2000), refers to people's activities in a house (where, whom, when, what; e.g., the number of cooking, laundry methods). Space means the built environment, which are design and physical form of culture, as discussed above; in this study it specifically refers to the desired space layout (e.g., living room, dining room, kitchen), furnishings and equipment in this study.

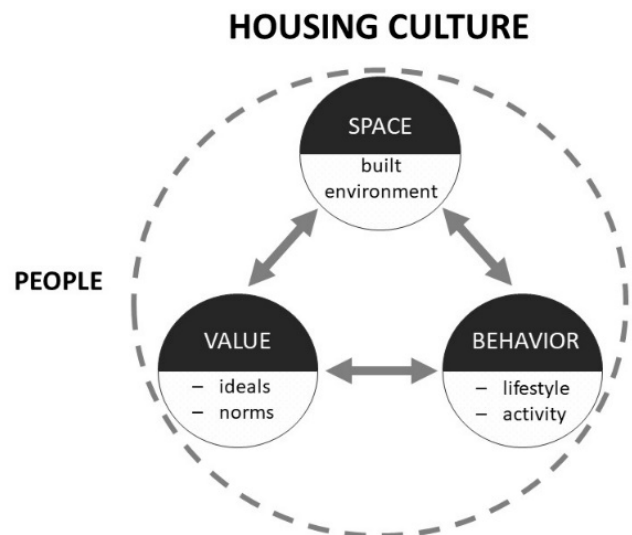


Figure 2. Conceptual framework of housing culture (based on Rapoport, 2001 and Ju and Kim 2014)

<sup>1</sup> Ideals, images, schemata, meanings have different meanings in detail, but in this paper, we name it as an ideals. And also norms, standards, expectations and rules are named as norms representatively.



Figure 3. Plan layout of a basic Malay house (Source: Ariffin, 2001)

Malaysian researchers (Hashim, 2006; GhaffarianHoseini & Dahlan, 2012) claim that major traditional value has been lost in contemporary houses but Malaysian people still prefer to live in the houses which keeps their own regional context (Lim, 2001; Hashim 2006; Utabert, 2010). Through the author’s long-term observations, and precedent research based on qualitative surveys, it has been claimed that the traditional Malay housing culture persisted in contemporary living. Therefore, this study aimed to analyze the traditional culture which was maintained, then transformed or disappeared in housing design through the quantitative surveys on residents’ thoughts, which was not attempted in any other study. If we can find that traditional housing culture has continued in any perspective of value, behavior and space, it helps to clarify the cultural identity of Malaysian housing.

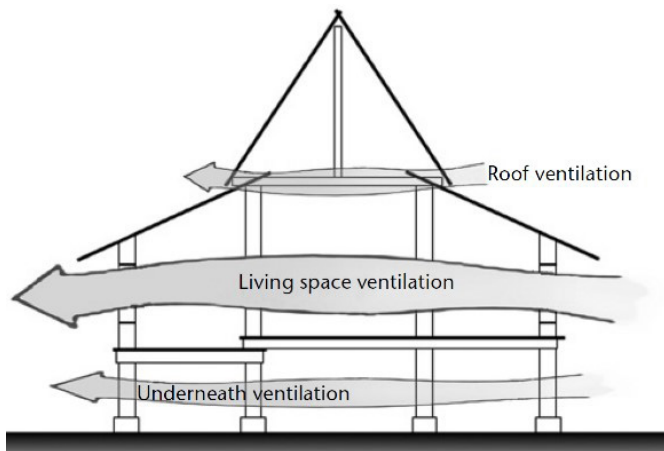


Figure 4. Climatic design of Malay house (source: Ju, 2017)

When applied to future housing design, the findings will contribute to enhancing quality of life by strengthening residents’ sense of place and social cohesion and by providing a culturally inherent design that eases the effects of globalization.

## 2. THE MODERNIZATION OF MALAYSIAN HOUSES

The traditional Malay house is a timber house raised on piles constructed to maximize ventilation throughout a house. The way the floor is lifted on piles allows cool air to pass beneath the floor. The sharply sloped atap roof protects the house from heavy rainfall, and the high and double-layered roof allows heated air to flow out quickly. The walls and windows are designed to be open to facilitate cross-ventilation inside a house (Lim, 1987).

One of the key concepts embodied in a Malay house is anthropomorphism, that is, that the form and order of a house are based on the human body (Ariffin, 2001). The house is divided into three sections that resemble the anatomy of the body: the roof, represents the head, the habitable space represents the torso, and the piles represent the legs of a human being. This belief also exists horizontally, with the *serambi* (male reception area) located in the front of the house, representing the face, and the *dapur* (kitchen) located at the back, representing the anu. Traditional Malay houses mostly comprise at least three fundamental spaces: the *serambi*, the *rumah ibu* (main house), and the *dapur* (Ariffin, 2017, as cited in Ju, 2017). The *serambi* is where male guests are entertained and social and religious functions take place. Conversely, the most private space in the house is the *rumah ibu*, where family members sleep, pray, and perform household tasks and other daily activities. Located at the back of the house, the *dapur* is the private space for females and also serves as a reception area for female guests. This hierarchical spatial order of *serami – rumah ibu – dapur* is the essence of a Malay traditional (Abidin, 1981), and has continued in the design of modern houses and apartments built in early days (Kim, 2015; Ju and Kim, 2020).

Through the colonization and modernization, the British brought in multi-racial immigrants into Malaysia, and it resulted in the formation of a unique social and cultural background of a plural society that consists of Malays, Chinese, Indians and other minority groups.<sup>2</sup> This phenomenon is the most important factor and characteristic of Malaysian modernization. The modernization of Malaysian housing is also the process of a fusion of traditional Malay housing and a variety of culture and architecture from China, India and European Colonial countries. The international style became dominant in 1960s after the country gained independence. Therefore, modern housing in Malaysia has been developed and influenced through social and cultural exchange with various ethnic and culture

<sup>2</sup> Malaysia is characterized by cultural diversity, named as plural society that consists of Malays, Chinese, Indians and other minority groups. The populations of Kuala Lumpur consist of Malays (45.9%), Chinese (43.2%), Indians (10.3%) and other minority groups (1.6%) according to the 2010 census.

and architecture. Modern housing in Malaysia can be classified into two categories.<sup>3</sup> The first category is the 'historic housing prototypes' developed in the early part of the 20th century from the colonial influence and the migration of various different ethnic groups. The most representative examples for this category are the shophouse and the bungalow. Second category is the 'modern urban housing prototypes' that was developed with the rapid industrialization and urbanization after the independence in 1957. Mass housing prototypes were needed and developed in 1960s and 1970s to provide housing for the rapidly increase urban population. The low and middle density housing such as detached house, terrace house, semi-detached house were developed with the establishment of suburban townships that was based on the British town planning principles. High-density flat, apartment and condominium are typologies out of the international style that was introduced in the 1980s and 1990s together with the development of new material and technology.<sup>4</sup>

The current housing development in Malaysia is driven by the rapid economic development as part of the globalization process. Unfortunately, the vestiges of traditional shophouse disappear gradually from the historic city centers. However, comparing with other high-density global cities, Malaysia is

still able to keep the socio-cultural value of low and middle-income community which has benefited form, eco-friendly and community-friendly urban mass housing.

### 3. METHOD

A quantitative survey was distributed to mothers of 129 married households living in a metropolitan area of Kuala Lumpur in August 2019. As many parts in the survey are related with housework, the target participants were wives of households of the middle class. The participants were selected after stratifying ethnicity, age, and housing type. This study developed a survey based on the framework of culture (see Figure 2). The main goal of this research project is to compare housing features, cultures, behaviors, and characteristics among Asians and the author compared housing cultures between Korean and Chinese (Ju and Kim, 2014). Therefore, this study adopted the survey used in 2014. After reviewed by the specialists in Malaysia and conducting a pilot study, the survey was finalized. The specific questions relating to built environment were developed based on Southeast Asian housing's unique value, lifestyle<sup>5</sup>, and space organizations, determined from previous research into Southeast Asian housing.

Table 1. Demographic information of family and family members

Family's characteristics		Factors							
Ethnicity, n (%)		Chinese	Malay	Indian	Other				
		47 (37.2)	58 (45.0)	22 (17.1)	1 (0.8)				
Lifestyle, n (%)		Health and leisure-oriented	Extrovert and challenge-oriented	Safety and material-oriented	Conservative and familial-oriented				
		44 (34.1)	7 (5.4)	12 (9.3)	65 (50.4)				
Housing type, n (%)		Terrace house	Town house, APT, Condo	Semi-detached house, bungalow	Others				
		56(43.4)	51(39.6)	18(13.9)	4(3.1)				
Family Members' Characteristic	Factors	Father (n = 129)	Mother (n = 129)	Child 0 (n = 39)	Child 1 (n = 90)	Child 2 (n = 64)	Child 3 (n = 24)	Child 4 &5 (n = 8)	Maids (n = 7)
		n(%)	n(%)	n(%)	n(%)	n(%)	n(%)	n(%)	n(%)
Age	< 10	-	-	-	35 (39.3)	23 (37.5)	10 (41.7)	4 (50.0)	-
	10's	-	-	-	36 (40.4)	31 (48.4)	11 (45.8)	4 (50.0)	0 (0.0)
	20's	25 (19.4)	42 (32.6)	-	17 (19.1)	4 (14.1)	3 (12.5)	0 (0.0)	1 (14.3)
	30's	39 (30.2)	24 (18.6)	-	1 (1.1)	0 (0.0)	0 (0.0)	0 (0.0)	1 (14.3)
	40's	26 (20.2)	41 (31.8)	-	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	4 (57.1)
	50's	35 (27.1)	22 (17.1)	-	-	-	-	-	1 (14.3)
	60's	3 (2.3)	0 (0.0)	-	-	-	-	-	-
Mother's Job	Housewife	-	27 (20.9)	-	-	-	-	-	-
	Work	-	91 (70.5)	-	-	-	-	-	-

Note. N=129. Due to missing values not reported in the table, percentage may not add up to 100%

<sup>3</sup> The following content are summarized from Ju & Saari (2010).

<sup>4</sup> According to the 2016 statistics, the most common types of housing are terrace houses (55%), flats/ apartments and condominiums (29%), detached houses (9%) and semi-detached houses (7%).

<sup>5</sup> The lifestyle types in the questionnaire was adopted from the following paper; Shin, Y.S. (2009) A Study on Apartment Design Preferences by Resident's Lifestyle, Journal of the Architectural Institute of Korea, 25(9) pp 141-150.

Table 2. Families' behavior pattern and preferred layouts

Factors		n (%)	Note
Space where the Family Gather in	Living room	105 (81.4)	
	Dining room	11 (8.5)	
	Kitchen	0 (0.0)	
	Master bedroom	7 (5.4)	
	Bedroom	2 (1.6)	
	Other	3 (2.3)	
Necessity of Guest Area **		$M = 4.09$ ; $SD = 0.68$	
Number of Times of Cooking per Week		$M = 5.10$ ; $SD = 3.05$	
Number of Times of Eating Delivery or Take-out food a Day		$M = 0.78$ ; $SD = 0.72$	
Activities at the Dining Table *	Eating	125 (96.9)	
	Treat a guest	44 (34.1)	
	Study & reading	22 (17.1)	
	Preparing meal	68 (52.7)	
	Play games	7 (5.4)	
	Other	2 (1.6)	Gossiping
Activities at the Living Room *	Eating	38 (29.5)	
	Treat a guest	92 (71.3)	
	Study & reading	84 (65.9)	
	Preparing meal	2 (1.6)	
	Play games	55 (42.6)	
	Other	33 (24.1)	Watching TV (29), Sleep (1)
Necessity of the Connection to Outside **		$M = 3.56$ ; $SD = 1.28$	
Space Belonged to the Kitchen Area *	Dry kitchen	98 (76.0)	
	Wet kitchen	110 (85.3)	
	Yard (Back yard)	50 (38.8)	
	Terrace	19 (14.7)	
	Separate laundry room	40 (31.0)	
	Maid bathroom	12 (9.3)	
	Utility room	26 (20.2)	
	Storage	54 (41.9)	
Place where the Washing Machine Installed	Yard (Back yard)	35 (27.1)	
	Laundry room	22 (17.1)	
	Dry kitchen	19 (14.7)	
	Wet kitchen	33 (25.6)	
	Maid bathroom	0 (0.0)	
	Bathroom	11 (8.5)	
	Utility room	5 (3.9)	
	Storage	1 (0.8)	
	Garage	1 (0.8)	
	Other	2 (1.6)	
Desired Place for Washing Machine	Yard (Back yard)	23 (17.8)	
	Laundry room	89 (69.0)	
	Dry kitchen	4 (3.1)	
	Wet kitchen	7 (5.4)	
	Maid bathroom	0 (0.0)	
	Bathroom	4 (3.1)	
Way to Ventilate the Bathrooms	Natural ventilation with window	116 (89.9)	
	Natural ventilation with louvre door	7 (5.4)	
	Mechanical ventilation	4 (3.1)	



For statistical analysis, owing to the non-normality of the data distribution, Mann–Whitney U tests and Kruskal–Wallis tests were conducted to explore differences in means, and Spearman tests were conducted to explore correlations among variables. Chi-square tests further analyzed families' characteristics (e.g., behavior patterns and demographic information) which are associated with the families' preferences for space layout. SPSS version 25 was used for data analysis.

#### 4. RESULTS AND DISCUSSION

The findings were organized into the major areas of a house.

##### 4.1 Living Room and Dining Room

The living room is the center of social activities, and most families (81.4%) gather in the living room (see Table 3). In the living room, the most frequent activity was hosting guests (71.3%), followed by studying and reading (65.9%), playing games (42.6%), and watching TV or sleeping (24.1%). Malay families entertained guests (62.1%) the most in the living room, significantly more so than Chinese and Indian families. Also, the “conservative and familiar-oriented lifestyle” group (80.0%) – comprising mostly Malay (75.0%) and Indian (73.7%) families – entertained a guest more in the living room than did the “health and leisure-oriented lifestyle” group (52.8%) – comprising mostly Chinese (63.4%) families [ $\chi^2(1,108) = 3.90, p < 0.05$ ].

When designing a house, the relation of L (living room), D (dining room), and K (kitchen) is critical to plan the space organization of a house. In traditional Malay houses, a hierarchy in the order of *serambi* – *rumah ibu* – *dapur* exists, as explained above. This hierarchical order has continued in early modern houses and even in early apartments. However, in contemporary houses, especially in contemporary apartments, this hierarchical order has changed (Ju & Kim, 2020). In this study, we surveyed mothers' preferences regarding L, D, and K relations.

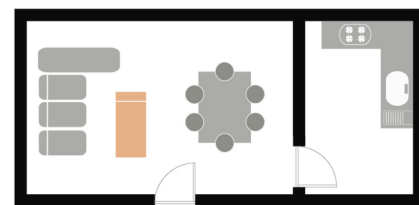
More than half of the mothers (54.3%) preferred an LD/K (combined living and dining room but separated kitchen) layout, which reflects traditional design. L/DK (separated living room but combined dining room and kitchen, 26.4%) and LDK (combined living room, dining room, and kitchen, 19.4%) were less preferred. These results reflect those of our previous study,<sup>6</sup> and the LD/K layout was preferred more by families who cook less than those who cook more.

The families who cooked less than once a day preferred more LD/K (61.0%) layout while the families who cook more than twice a day preferred more LDK (42.6%) and L/DK (40.4%) layouts [ $\chi^2(2,129) = 7.63, p < 0.05$ ]. In addition, the families who entertained guests in the living room significantly preferred the LD/K layout (63.0%) compared with the other layouts [ $\chi^2(2,128) = 12.98, p < 0.01$ ]. Lastly, the “conservative and familiar-oriented lifestyle” groups preferred the LD/K layout (64.6%) compared with the “health and leisure-oriented lifestyle” groups [ $\chi^2(2,109) = 9.55, p < 0.01$ ].

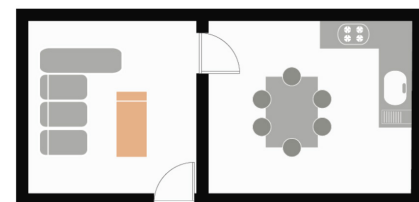
<sup>6</sup> As a result of analyzing the unit building plans of the 22 residential precincts located in Ara Damansara Petaling Jaya, Malaysia, the most prevalent LDK relation found is the LD/K type (63%), and the other apparent relation type is the L/D/K (37%) (Ju & Lee, 2015).

The space for hosting guests is important in a traditional Malay house. The *anjung* (entrance) and *serambi* serve as a guest area. In traditional Malay houses, guests are not permitted to enter the private space (*rumah ibu*); instead, they are entertained in the *anjung* and *serambi* located at the front of a house. But in contemporary houses, it is hard to find separate guest spaces, except for in spacious bungalows or luxurious condominium units. The participants agreed on the fronsstity of a guest area ( $M = 4.09$  on a 5-point Likert scale, with 1 “strongly disagree” and 5 “strongly agree”). Malay families, especially, noted a statistically higher necessity for a guest area ( $M = 4.25$ ) than did Chinese families ( $M = 3.90$ ) [ $H(2,126) = 6.64, p < 0.05$ ].

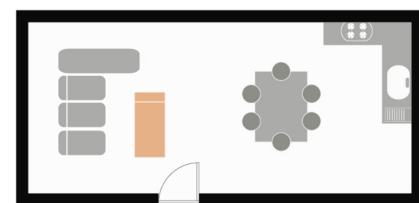
To sum up the findings regarding social behaviors, living rooms were the center of family gatherings, and entertaining a guest was the most frequent activity performed in living rooms, especially for Malay families (62.1%) and the “conservative and familial-oriented lifestyle” group (80.0%). Malay families also showed a strong desire of having a guest area as an additional space for their house compared with other ethnicity groups. As a Malay tradition, the *serambi* (guest space) is an essential component of a house. However, this space has been disappearing during modernization. Nevertheless, this study found that the tradition of entertaining guests has continued, regardless of the existence of the space, with the LD/K layout (combined living and dining room but separated kitchen) being the most popular design. The preference to maintain this cultural tradition was stronger among Malays.



LD/K (combined living and dining room but separating kitchen) 54.3%



L/DK (separating living room but combined dining room and kitchen, 26.4%)



LDK (combined living, dining room, and kitchen, 19.4%)

Figure 5. L (living room), D (dining room), and K (kitchen) layout preferences



Figure 6. Serambi (guest space) in traditional Malay house



Figure 7. Guest area in modern Malay house

### 4.2 Bathroom

In the design of traditional houses, there was no designated space inside a house for bathing. During the modernization period, the bathroom was moved inside a house at the back (Kim, 2015). In other Asian countries, a squat toilet is common, and a basin or bucket are essential appliances in a bathroom. However, participants preferred a sitting toilet (93.8%), a shower (97.7%) and sink (85.3%) to a basin (25.6%) or bucket (31.0%). This study found that bathing behavior has evolved into a modern style.

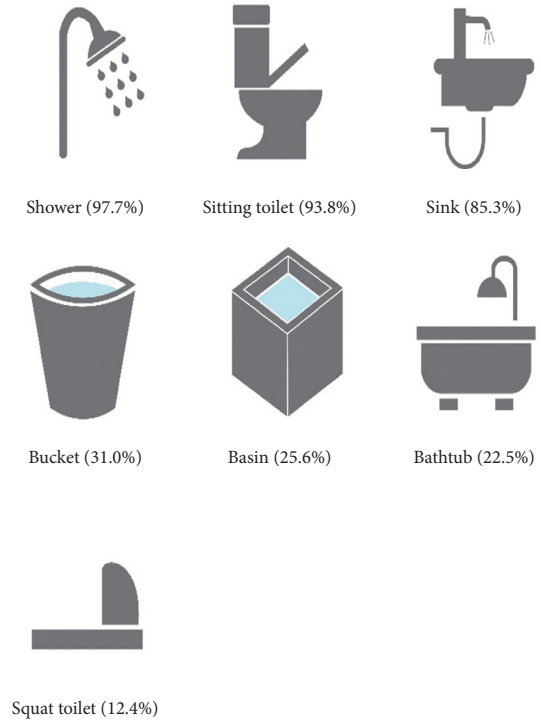


Figure 8. Facilities in bathrooms

Table 3. Different preferred layouts of living room, dining room, kitchen, and guest area among the different families' characteristics

Families' characteristic LDK (%)		Preferred layout of L/D/K			χ <sup>2</sup>
		L/DK (%)	LD/K (%)	LD/K (%)	
Number of times of looking a day	Less than once (n = 82)	17(20.7)	15(18.3)	50(61.0)	7.63*
	More than twice (n = 47)	8(17.0)	19(40.4)	20(42.6)	
Lifestyle	Health and leisure (n =44)	14(31.8)	13(29.5)	17(38.6)	9.55**
	Conservative and familial (n =65)	7(10.8)	16(24.6)	42(64.6)	

\* p < 0.05, \*\* p < 0.01, \*\*\* p < 0.001

Note. a, b: post-hoc Mann-Whitney. a < b.

In Southeast Asian countries, ventilation is critical for a comfortable environment owing to the tropical climate. Ventilation is especially critical in the bathroom, kitchen, and utility space. To ventilate bathrooms, most families did this through a window in their current house (89.9%), and they desired natural ventilation for a future house (74.4%). Similarly, the “health and leisure-oriented lifestyle” group (88.6%) preferred natural ventilation through a window compared with other groups (21.5%) [ $\chi^2(2,109) = 7.71, p < 0.05$ ]. Natural ventilation was the most preferred method among the three different ethnicity groups; however, Malay families showed stronger preferences of mechanical ventilation compared to Chinese and Indian families [ $\chi^2(2, 128) = 13.38, p < 0.01$ ]. Younger mothers (in their 20s or 30s) (16.7–33.3%) liked mechanical ventilation compared with older mothers (in their 40s or 50s) (0–7.3%) [ $\chi^2(3, 129) = 10.88, p < 0.01$ ].

Table 4. Associations among different demographic characteristics and their ideal house and behavior patterns at current house

Lifestyle		Health & Leisure		Conservative & Familial		$\chi^2$
		<i>n</i> (%)		<i>n</i> (%)		
Desired way to ventilate the bathroom	Natural ventilation with window (n=80)	39(88.6)		43(66.2)		7.71*
	Natural ventilation with louvre door (n=11)	3(6.8)		7(12.3)		
	Mechanical ventilation (n=16)	2(4.5)		14(21.5)		
Number of times of cooking per week		M(SD)		M(SD)		Z
		4.30(2.43)		5.76(3.56)		2.02*
Ethnicity		Chinse	Malay	Indian	$\chi^2$	
		<i>n</i> (%)	<i>n</i> (%)	<i>n</i> (%)		
Desired way to ventilate the bathroom	Natural ventilation with window (n=95)	39(81.3)	36(62.1)	20(90.9)	13.38**	
	Natural ventilation with louvre door (n=15)	6(12.5)	7(12.1)	2(9.1)		
	Mechanical ventilation (n=18)	3(6.3)	15(25.9)	0(0.0)		
Number of times of cooking per week		M(SD)	M(SD)	M(SD)	Z	
Necessity of guest area		3.90(0.69) <sup>a</sup>	4.25(0.66) <sup>b</sup>	4.14(0.64)	6.64*	
Number of times of eating delivery or take-out food a day		4.09(2.19) <sup>a</sup>	5.82(3.63) <sup>b</sup>	5.14(2.33)	6.67*	
Number of times of eating delivery or take-out food a day		0.91(0.70) <sup>b</sup>	0.63(0.75) <sup>a</sup>	0.90(0.63)	6.15*	
Housing type		Terrace house	Town house, APT, Condo	Semi-detached house, bungalow	$\chi^2$	
		<i>n</i> (%)	<i>n</i> (%)	<i>n</i> (%)		
Space Belonged to the Kitchen Area	Wet kitchen (n=106)	54(96.4)	38(74.5)	14(77.8)	10.75**	
	Separate laundry room (n=38)	16(28.6)	12(23.5)	10(55.6)		
	Maid bathroom (n=12)	5(8.9)	2(3.9)	5(27.8)		
Mother's age		20's	30's	40's	50'	$\chi^2$
		<i>n</i> (%)	<i>n</i> (%)	<i>n</i> (%)	<i>n</i> (%)	
Desired way to ventilate the bathroom	Natural ventilation with window (n=96)	31(73.8)	13(54.2)	31(75.6)	21(95.5)	15.86*
	Natural ventilation with louvre door (n=15)	4(9.5)	3(12.5)	7(17.1)	1(4.5)	
	Mechanical ventilation (n=18)	7(16.7)	8(33.3)	3(7.3)	0(0.0)	
Number of children		No child	1	2	More than 3	H
		M(SD)	M(SD)	M(SD)	M(SD)	
Number of times of cooking per week		3.90(2.14) <sup>a</sup>	5.96(2.81) <sup>b</sup>	4.85(2.78)	6.55(4.11) <sup>b</sup>	11.47**

\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

Note. a, b: post-hoc Mann-Whitney. a < b.





Figure 9. Traditional bathroom

The findings indicate that the need for natural ventilation in a bathroom is generally strong, especially among the older generation and the “health and leisure-oriented lifestyle” group.

### 4.3 Kitchen and Service Area

Cooking is an essential behavior for daily life. The rapid increase of delivery food can affect cooking behavior and design of the service area, and this has been associated with family characteristics. “The conservative and familial-oriented families” [ $Z(103) = 2.02, p < 0.05$ ], the families with a homemaker [ $Z(114) = 2.21, p < 0.05$ ], and the families with more children [ $H(3,127) = 11.67, p < 0.01$ ] cooked significantly more and ate delivery or take-out food less frequently than did the other families. Chinese families cooked less [ $H(2,126) = 6.67, p < 0.05$ ] and ate more delivery or take-out food [ $H(2,126) = 6.15, p < 0.05$ ] than did Malay families.

In traditionally designed houses, service activities (cooking, laundry) usually occurred outside and underneath a house where it was shady and cool. But with modernization, traditional outdoor activities moved inside and were condensed into a small area.

Separating the kitchen into a dry kitchen and wet kitchen is a unique tradition found in Southeast Asian countries. The dry kitchen is used for preparing food for cooking and serving food, while the wet kitchen is for cooking using a fire and is sometimes used as laundry space when a separate laundry space is lacking (Ju & Lee, 2015). Traditionally, there were no dry or wet kitchens. However, as the service activities moved inside, the separation of dry and wet kitchens was necessary to hide the messy working space and to prevent heat and smoke escaping the kitchen.



Figure 10. Contemporary bathroom

Most participants had both wet and dry kitchens (68.2%) and preferred the kitchen to be located at the back of the house (82.2%). It was found that most families had both wet and dry

kitchens (68.2%), while families living in smaller houses (terrace houses) had only a wet kitchen (96.4%) [ $\chi^2(2,125) = 10.75, p < 0.01$ ]. In contrast, half of the families (55.6%) living in bigger houses (semi-detached house and bungalows) had a separate laundry room [ $\chi^2(2,125) = 6.61, p < 0.05$ ], and 27.8% had a maid’s bathroom in the service area [ $\chi^2(2,125) = 8.78, p < 0.05$ ]. The results showed that in comparatively large houses, the service space was differentiated into spaces such as laundry room and maid’s space. However, in a small house, a wet and dry kitchen functioned as spaces for diverse service activities.

Traditionally, a kitchen was regarded as a dirty space and was located at the back of the house based on anthropomorphism. It was also regarded as a female space and protected from visitors based on Islamic religion (Hashim et al., 2006).

It was found that most families preferred the kitchen to be located at the back of a house (82.2%). The families with older mothers (in their 40s and 50s) who had more than two children particularly preferred kitchens to be located at the back of the house (see Table 4). The results indicate the culture of locating the kitchen at the back of the house continues among the older generation, but it does not among the younger generation.

To do the laundry, most families used washing machines (96.9%), which were installed in the backyard (27.1%) and the wet kitchen (25.6%). For the desired house, families wanted to place the washing machine in a laundry room (69.0%). The families’ need for the kitchen’s connection to the outside was not comparatively high ( $M = 3.56$ ).

To dry their laundry, most participants (89.1%) preferred natural laundry drying over mechanical drying (7.0%). A yard is a multi-purpose utility space, mainly for laundry and drying clothes, and this is usually an outdoor area in landed houses; however, in high-rise apartments, the yard is a terrace-type space open to the outside but without a window, replacing the outdoor space.

It can be summarized that while people do wash their clothes in a yard or wet kitchen, they prefer a separate laundry room if space is allowed. We understand that the present yard and wet kitchen are multi-purpose spaces for washing and drying, cooking, and storage, which are usually not spacious enough. The custom of natural laundry drying under the sun strongly continues. Therefore, outdoor spaces such as the yard, and sometimes terrace and roof terrace, are essential spaces for service activity.

## 5. CONCLUSION

As a result of this study, the cultural identity of Malaysian housing was summarized as follows;

Hosting guests has been an important cultural aspect of a Malay traditional house, and *serambi*, an open veranda, was the designated space for guests. However, the space has disappeared, except for in large houses, and instead guests are hosted in the living room and dining room.

Cooking is also an important behavior regardless of the rapid increase in delivery food. Traditionally, a separation of

*dapur* (kitchen) from the *rumah ibu* (main space) of a house was essential, and this tradition was transformed into the LD/K layout, separating the kitchen from living and dining area in modern houses. Most families had both wet and dry kitchens (68.2%) and preferred the kitchen to be located at the back of a house (82.2%). This result demonstrates that the culture of anthropomorphism continues; however, this phenomenon can also be explained by the functional need to prevent heat and smoke escaping from the kitchen and to enhance the natural ventilation of a kitchen.

Natural ventilation is a critical issue in Malay vernacular houses to maintain quality of living. Participants showed a strong preference for natural ventilation (74.4%) instead of mechanical ventilation (14.0%). Bathing habits have changed from the traditional style of using a basin (basket) and a squat toilet to reflect the Western style of using a shower and sitting toilet.

Regarding service activities, people maintain many traditional habits, such as drying clothes under the sun and hand washing (Ju & Kim, 2022), but the service spaces are quite small compared with other spaces in the house, although they have multiple purposes. Therefore, the service area in modern houses should be carefully designed to accommodate diverse service behaviors and peoples' habits.

To conclude, this study found out that the essence of traditional housing culture has continued in relation to welcoming guests, the hierarchical order of space, natural ventilation, and drying clothes under the sun, even though the physical forms of contemporary houses have changed.

Even though, this study has a limitation due to small number of sampling, it showed statistically that traditional behaviors and values were continued among Malaysian people and people prefer to live in natural environment.

To build a healthy and sustainable society, it is critical to retain this cultural habit and reflect this carefully in contemporary housing design.

The greatest achievement of this study is that it statistically strengthens the hypothesis that the traditional housing culture continues in contemporary life, which has been claimed by many scholars' intuition and observation. This study will be replicated in other Southeast Asian countries, and then a comparative study of Southeast Asian housing culture will be possible, and the cultural identity of each country more clearly defined through the comparative study.

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