Preferences of Security Criteria in Low-Cost Housings among Malaysian Residents

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Abstract— **Malaysia has developed rapidly, and more youngsters have moved to urban areas to seek better working opportunities. However, the competition in cities is intense. Those with low income and intending to stay in urban areas must purchase low-cost houses as their shelters. Low-cost houses often come with lower specifications due to the limitations that arise from their prices. This caused more crimes happened in these high-density and low-security-level areas. Thus, improving the security criteria to protect the residents at a low cost is necessary to reduce their fear of crime and improve the security level. This study has collected opinions from residents on the preferences of security criteria from several in-depth interviews. These respondents were selected based on a convenience sampling method in three main cities in Malaysia such as Kuala Lumpur, Pulau Pinang, and Johor Bahru, and responded that respondents are the ones who feel the limitations of low-cost housing. The results confirm that tangible criteria, such as surveillance, access control, territoriality, and target hardening, and intangible criteria, such as sense of community, management, and maintenance, are worth to be applied. The residents of low-cost housing prefer these criteria as the initial cost and maintenance cost for these criteria is comparably lower, which is more affordable for the low-income group. The results can be the foundation of future secure low-cost residentials planning by property developers and authorities.**

Keywords— **Low-cost housing; security criteria; Malaysia; residents; preferences.**

I. INTRODUCTION

Crime is one of the most serious issues in cities worldwide [1]. It caused various problems and disturbances in urban areas [2]. This has subsequently led to the need for crime prevention actions. In addition, criminality has surged in Malaysia's low-cost housing, as have many illegal foreign workers. As mentioned by Rosenberg et al. [3], the main concern among housing choices is a sense of security, which can result in eminent surroundings. According to Statistic Malaysia [4], there are 71,760 cases of property crime, including break-ins and theft, vehicle theft, snatch theft, and other theft. Police predicted house crimes would increase if foreign workers increased [5]. The fear of crime will grow among residents, especially when their residential area is occupied by foreign workers [6], [7]. This is because many cases like robbing, stealing, and fighting among foreign workers frequently happen in low-cost housing areas. This caused the residents not to be willing to live in a low-cost housing area.

II. MATERIALS AND METHOD

In Malaysia, the rural areas are experiencing the urbanization process. Urbanization is when a city's population increases due to migration. Many people migrate to urban areas as job opportunities and a better living environment attract them. The facilities provided in the urban area led to a convenient life. Therefore, there is a high migration rate from rural to urban areas. Badiora et al. [8] and Warwick [9] agreed that most migrants look forward to urban employment to improve their quality of life. However, Kitteringham and Fennelly [10] mentioned that the rapid growth of a city might lead to social change and city expend. This would be the hot spot for criminals as the security level is still weak in developing cities [11], [12]. Fennelly [13] and [7] also stated that the crime rate is the most concerning issue in many countries, and this has led to the residents wanting to stay in a gated community.

Housing has evolved in the social realm, and criminal issues will be higher in the city areas than in the suburbs [14]. Thus, homeownership is highly valued as a symbol of security

in their dwelling, status, wealth, and general well-being [15]. According to Qinglei et al. [16], most residents are increasingly aware of the security issues in many countries. According to Domínguez and Montolio [17] and Badiora et al. [8], high crime rates happened in urban areas, including daylight burglary, night burglary, car theft, and snatch theft. Besides, many house owners rent their houses to foreign workers, which might lead to security issues. According to Misman et al. [18], about 11.2% of the total crime issues were related to foreigners. Local residents complain about this as foreigners have been blamed for causing social problems and chaos [19]. In addition, Badiora et al. [19] also mentioned that the immigrants had become one of the problems: disturbing the neighborhood by stealing things, quarreling, and fighting after drinking alcohol. Furthermore, Criminal activities such as robbery, auto break-ins, and burglary have been on the rise in inexpensive housing neighborhoods, increasing residents' dread of crime [20]. Residents will always feel unsafe and worry they will be the victim of criminal cases. This has led people to move into gated communities with security patrols [21], [22].
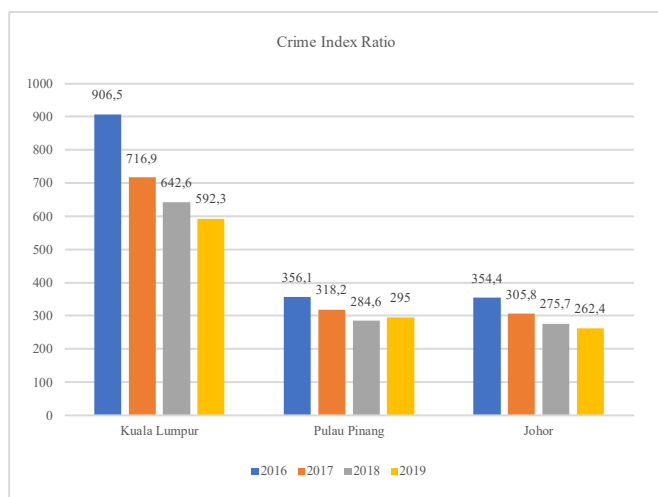

Fig. 1 Crime Index Ratio

Fig. 1 shows that the crime rate in Malaysia has decreased. However, the Crime Suppression and Prevention Department indicated that many criminal cases still do not report, so the actual crime rate might be significantly higher than the record [23], [24]. Khan [25] has conducted a survey. He found that about 25% of criminal cases are unreported as most issues are related to petty cases; the victims worry the criminals will face reprisal if they report the incidents. In 2018, Malaysia reached a high crime index of 66.95 and ranked first among the 23 Southeast Asian countries while ranked second among 90 Asian countries [26]. According to the survey done by Hew et al. [27], the main criminal issue in Malaysia is snatch theft, followed by break-ins, physical assault, and vehicular theft. Although the reported criminal cases have been reduced due to the stricter patrol by police, the neighborhood crime rate is still high [28]. William et al. [24] also mentioned that most of the crimes happened when the house owners were not around for a long period, especially during festive seasons. There are also other cases like broken vehicle windows and theft of vehicle accessories due to the insufficient parking lots provided by affordable house developers. Any dwellers that own more than a car in their house need to park their vehicles along the street, which might encourage car hijacking.

This has led the residents to treat security level as the primary consideration [29]. Welsh et al. [30] stated that local housing complexes, particularly those created for low-income households, are hesitant to embrace recommended practices and perpetuate a conventional design model that is not always tailored to individual geographic and socioeconomic circumstances. Secure housing criteria are needed to avoid criminal activities in affordable housing. However, it was discovered that the government had tried various techniques throughout the years to adapt to changing situations and property demands, particularly in the area of cheap housing. As a result, a structured safety performance assessment is required to develop a link between design criteria and user preferences to improve living quality. In the early 1970s, the Crime Prevention through Environmental Design (CPTED) initiative was created to reduce the number of criminal cases in metropolitan areas. CPTED stands for "effective design to reduce fear of crime and criminal issues in housing areas in order to improve residents' living conditions." [31]. Surveillance, access control, territoriality, target hardening, the feeling of community, management, and maintenance are the six essential elements covered in CPTED. These principles are categorized into tangible criteria and intangible criteria.

A. Tangible Criteria

1) Surveillance

Surveillance refers to implementing the physical security features that involve the activities and management team to maximize the function of surveillance. According to the studies of Lau and Ali [32] and Molaei and Hashempour [22], optimizing the usage of surveillance criteria can help reduce criminal issues. Surveillance can be carried out in the formal form (security guard, management team, and having policy) and informal forms like residents or passers-by. Residents watching each other in residential areas can help reduce the opportunities for offenders to commit crimes [32]. This is because surveillance helps residents observe the surroundings to increase the visibility of blind spots around the residential area.

Natural surveillance, like the installation of windows and clear lines of vision, can maximize observation, which can increase the alertness of residents [3], [33], [34]. According to Marzbali et al. [34], natural surveillance's primary goal is to ensure that criminals are being watched. The housing should be designed in a form that can easily observe by residents or security features to increase visibility and transparency to reduce criminal activities by maximizing the surveillance possibilities [35]. Besides, the security system needs to be implemented in luxury and low-cost housing areas. The security system is a network feature that uses electronic devices working with a central control panel to easily obstruct strangers or suspicious people from accessing the building. According to Marzbali et al. [34], security guards can be stationed at the building's main entrance, parking lot, and lobby to patrol and guard against crime and fear of crime. The criminal issue can be reduced by maximizing the usage of these security systems like CCTV,

security guards, and informal surveillance, which residents keep an eye on the surrounding.

Furthermore, mechanical surveillance such as CCTV and illumination can be installed in the dark region to record in and out activities and any suspicious activity in the dwelling area, thereby preventing criminal activity. According to Jang et al. [36], CCTV can deter criminal activities like vehicle crime or burglary and record the appearance of the offenders to help in arresting them offenders, while lighting installed along the residential area such as the invisible areas and dark areas to reduce the fear of crime of residents. Furthermore, street lighting can improve visibility in dark areas and help residents keep an eye on residential areas by increasing the surveillance of activities happening around the residential area [37].

2) Access Control

Access control is designed to control people's access to a building or an area. This can reduce the opportunities for criminals to commit a crime by prohibiting the access of suspicious outsiders. According to Molaei and Hashempour [22] and Sourd and Delbecque [38], the housing area that does not install any security devices has a higher criminal risk than the property with security devices. Furthermore, a guard house and boom gate can be installed at the main entrance of the low-cost house to ensure that all the visitors register before entering the building [17]. The uniformed guard should check the purpose of visitors entering the housing area or make sure the visitors are recognized by the owner who lives in the building before giving access permission to visitors [21]. This can limit the access of offenders to break into a housing area. Access control aims to reduce criminal opportunities by denying access to suspicious targets. Entrance control refers to physical obstacles to govern access to and exit from a place. Gatekeepers such as walls, gates, and locks serve as physical barriers to keep prospective criminals out [39]. The purposes of setting access control are:

- To prevent the residents from becoming potential targets of offenders
- To increase the physical difficulty of accessing the residential area
- To prevent the offenders from breaking into the housing area easily

The housing area that does not install security devices has a higher crime rate than the property with security devices [5]. There are real barriers and symbolic barriers [1]. Real barriers refer to the physical barriers installed at the entry, like boom gates, while symbolic barriers refer to social influence. The physical barriers that work with these symbolic barriers are not intended to restrain access but to function as a joint of three factors: territoriality, ownership, and occupancy.

3) Territoriality

According to Armitage and Ekblom [40], territoriality is a pattern of human behavior that emphasizes space management and involves personalization, occupation, and defense to define the territory they own. There is physical territoriality that residents mark the area as their own by installing fences or walls [21]. Newman [41] has suggested that physical design is needed to split the region into residential areas. This can increase the residents' sense of belonging and control over the spaces. Furthermore,

according to Newman, there are four types of space: public, semi-public, semi-private, and private. Strangers and outsiders cannot enter the region because of the fence. As a result, territoriality can ensure that the residential area can function as a private environment where potential criminals have no possibility of entering.

Territoriality can be defined as dividing private and public regions to create a sense of ownership among residents [5]. Installing a gate in front of the property entry or placing a notice near the entrance indicating the area is private can accomplish this [21]. This action is done based on the assumption that residents who have a sense of belonging will emphasize the security criteria within the private area. Mousavinia et al. [21] found that territoriality can greatly reduce crime rates. Furthermore, the effectiveness of the territoriality concept has been substantiated by Molaei and Hashempour [22], Zheng et al. [15], and Qinglei et al. [16] 's studies. It can be said that the territorial design concept can strengthen the security level of residential areas and improve the sense of ownership among the residents to reduce criminal cases. According to Abdullah et al. [42], territoriality reinforcement is the most important concept compared to other security criteria. There are two sorts of territorial barriers: symbolic barriers (signage, slight variations in road texture, such as paving surface changes) and physical barriers (barriers to movement) (for example, fences or design elements that clearly define and delineate private, semi-private and public spaces) [43].

4) Target Hardening

Target hardening refers to using the door, window, fences, and other physical structures to prevent breaking in by offenders easily. Most burglars will choose the lower properties as their targets for higher levels [21]. Therefore, burglary-proofed doors and windows should be installed in every house to prevent burglars from having the chance to break in. The use of walls, fences, burglary-proofed doors, and windows is intended to make it more difficult for criminals to access homes. According to Molaei and Hashempour [22], target hardening is preferred by home purchasers and designers. Since it is the most basic requirement for upgrading physical structures such as metal burglar-proofed windows and doors, high fence walls, and door and window grilles to prevent criminal difficulties [22], a security alarm can be installed in the house as a high-decibel alarm will sound if the door or window is broken and forced open by violence and this can attract the attention of neighbors. Therefore, low-cost housing can choose to install these devices to increase the security level of the houses and reassure the residents' safety. This is very important to keep the house safe from criminal issues as the target hardening measures will reduce the opportunity for theft or robber to sneak into the house [44]. Some research was committed to identifying target hardening performance and ways to improve the security level in residential areas [14], [45]. This research shows that target hardening plays an important role in security and health performance as it helps in improving the living environment, security level, and residents' health in a building [14], [33], [45].

B. Intangible Criteria

1) Sense of Community

A person's sense of belonging, duty, and providing level of trust in the community is defined a sense of community (SOC) [17]. There are four components included in SOC [17],[46], which are:

- Community participation: Residents in the residential area participate in community activities and communication to be familiar with each other, creating a sense of security.
- Influence and trust: The community and residents understand and trust each other to create a sense of responsibility to maintain the security level in residential areas.
- Emphasis on needs: The importance of community bonds in motivating people and maintaining a continuous sense of esprit de corps is critical.
- Emotional exchange: The interaction between the community and residents by sharing their stories, experiences, hobbies, and frame of mind to let them know each other. This encourages inhabitants to appreciate the value of community and to participate in activities that allow them to meet new people in the region [46].

According to Xu et al. [47], the community uses SOC to encourage the residents to participate in activities to prevent any annoying behavior in the housing area. SOC is to raise awareness and a sense of belonging by developing good relationships with other residents, understanding someone's behavior that affects the community, and consolidating the affinity toward the community. Gonzalez and Komisarow [48] mentioned that SOC could also be explained that someone who cares about the community. It is said that having a good relationship by greeting people and giving a hand to neighbors who need help can improve the sense of community. The interaction among residents can help them get to know each other and improve their relationships. The closer the relationship among residents, the higher the sense of community as they will keep an eye on the house for each other [49]. This can create a feeling of security, knowing that neighbors are looking out and the offenders will not break in easily. Neighborhoods and surrounding areas are important criteria for residents and house buyers. So, house buyers should research the neighborhood area before buying a house [29], [49]. This is because they will stay at this place for many years. Hence, a good and right neighborhood is very important to house buyers and residents to have a high-quality and comfortable living environment. A secure neighborhood will reduce criminal and accident cases, and the residents can have a peaceful and safe living area.

2) Management and Maintenance

Management and maintenance are important to create a living space free from crime, vandalism, and damage [31], [50]. The continuous growth of security issues in low-cost housing areas indicates that an appropriate management system is needed to provide a quality living experience for the residents [51], [52]. The Joint Management Body (JMB) plays an important role in managing the residential area and avoiding the criminal cases that happen in the residential area [22], [53]. JMB should prominently treat security matters like building maintenance, restoration, and improving every

facility in the housing area [46]. Besides, JMB can also conduct monthly meetings about security issues to comprehend residents' demands and improve the security system to reduce the security issue in the housing area [51], [53].

Au-Yong, Ali, and Chua [45] mentioned that maintenance is important to protect the building from vandalism. The research of Cozens and Tarca [54] shows a link between the amount of housing maintenance and the level of security. Criminals will target a housing area with poor administration and maintenance [33]. Based on the Broken Windows theory, housing areas with poor management and maintenance will be the target of criminals, especially damaged buildings without maintenance [44], [46], [54]. According to Mousavinia et al. [21], offenders will not risk breaking into a housing area that cares for and concerned by residents and has good maintenance. Therefore, the government has released funding programs to encourage the residents to organize a management team or security associations to patrol their housing area and increase security levels [46], [48], [7]. According to Au-Yong et al. [51], residents will be charged a management fee to cover the cost of security features and a maintenance fee to guarantee that the amenities are in excellent working order and safe to use. Besides, many researchers mentioned that the management and maintenance of neighborhoods would help reduce criminal issues significantly [45], [53]. The maintenance fee collected from the residents should be utilized for the maintenance of CCTV and boom gates, replacing or upgrading the lighting of the building, and repairing any damaged property. According to Xu et al. [47] and [33], management and maintenance is important to prevent crimes and bad image around the housing area.

This study adopts a qualitative method where an interview session is the main data-collecting tool. A total of 5 in-depth, semi-structured interviews were conducted, with the data gained being supplemented by secondary data to improve validity. As the sample frame was unknown, convenience sampling was used [55]. In addition, the convenience sampling approach can save time and money [56]. As a result, all interviewees were chosen solely on the basis of their availability during the data-collecting session. The interviewees in this study are low-cost housing residents from Kuala Lumpur, Pulau Pinang, and Johor. Respondents were chosen because they are low-cost housing residents. After the interviews were transcribed, thematic analysis was used to look for response patterns or themes. This means that the interview data were compiled and mapped to discover response trends. The frequency with which such subjects were discussed was counted using content analysis. The motivation for this study was to learn more about the security requirements for low-cost housing, with one of the targeted outcomes being a review of the key principles of CPTED in residential housing.

III. RESULTS AND DISCUSSION

TABLE I below shows the respondents' backgrounds where their opinions are helpful in this research as the information, they give tends to reflect reality. TABLE II displays the number of crimes that occur in the respondents' neighborhoods. The survey shows that the frequency of crime

events in most of the respondents' residential housing areas is seldom, and one respondent mentioned a moderate frequency of crime events in residential areas.

TABLE I
RESPONDENTS' BACKGROUND

Respondents	Background of the Respondents	
A	Location	Pulau Pinang
	Age	36
	Income	RM 4,500.00
	Length of Staying	1-4 years
B	Location	Pulau Pinang
	Age	44
	Income	RM 4,600.00
	Length of Staying	5-9 years
C	Location	Kuala Lumpur
	Age	40
	Income	RM 5,000.00
	Length of Staying	5-9 years
D	Location	Kuala Lumpur
	Age	50
	Income	RM 6, 000.00
	Length of Staying	10-14 years
E	Location	Johor
	Age	58
	Income	RM 5,500.00
	Length of Staying	20 years and above

TABLE II
FREQUENCY OF CRIME EVENTS

Respondents	Frequency of Crime Events	Density of Residential Area
A	Seldom	Low
B	Seldom	Medium
C	Moderate	Medium
D	Seldom	High
E	Moderate	High

The respondents mentioned hearing about security issues in their residential area. Respondents A, C, and D mentioned that car accessories theft occur in residential areas like car batteries, car tires, and motorbike petrol. Respondent B mentioned that he seldom heard about security issues from the residents, but the access card can be cloned, and the security guards do not patrol the residential strictly. Thus, it is difficult to distinguish between residents and non-residents. *"The criminal might clone the access card and access the building easily to commit a crime,"* said Respondent B. This shows that security criteria are needed to be installed, and important to strengthen the security features to increase the security level in low-cost housing.

Respondents were asked about their satisfaction with their accommodation. Although most respondents are satisfied with their accommodation, several aspects can be further enhanced, like the surveillance where Respondent A said that he would be happy if security guards patrolling the parking area or CCTV were installed at the parking area. Whilst there is a respondent who suggests doing regular maintenance to ensure there are no damaged facilities. Also, respondents mentioned that it is better if a boom gate is provided to block non-residents, and respondents hope that the neighborhood could keep an eye on each other.

TABLE III shows the important aspects that should be installed in low-cost housing to form a secure home for residents. Most respondents declared that a security guard system, CCTV installation, and access card are important to create a secure housing area for residents. Respondents suggest that the access card should only access designated areas like their living and facilities floors. Respondents C and E suggested that the housing area managed by a management team would more effectively prevent crime. Besides, respondents also think that walls are compulsory to differentiate between residential and public areas. By having the walls and boom gates, strangers and non-residents are not allowed to access the residential area, thus reducing the opportunity for criminals to commit a crime.

TABLE III
SECURITY CRITERIA NEEDED FOR LOW-COST HOUSING

Security Issues	CCTV	Security Guard	Street Lighting	Access Card	Boom Gate	Fencing / Wall	Sense of Community	Management Team	Regular Maintenance
A	/	/		/	/				
B	/	/		/					
C	/			/	/		/	/	
D			/		/	/			/
E			/				/	/	/

Respondent D said, *"the steel staircases are already rusted, and the CCTVs are not functioning, so maintenance is important to maintain the building to prevent offenders from committing a crime."* According to Respondent D, there is no regular maintenance on the security facilities, and this led to the wastage of installation of security features. Besides, Respondents D and E also mentioned that there is insufficient lighting around the housing area, and the dark area will attract crime as the area without lighting is hard to survey by the surveillance system.

Based on the opinion of respondents, there are challenges in providing security features in low-cost houses. Most of the respondents mentioned that the installation cost of the security features would be the main problem. This is due to the increment in the living cost, but residents' salary is not increasing, so they cannot afford the maintenance fees. Besides, Respondents B, C, and E said that *"residents nowadays are not willing to recognize each other, and this results in unfamiliar neighborhoods. They even do not know who is staying around them."* This will lead to difficulty in forming a sense of community among residents as it is difficult to help keep an eye on whether non-residents can access the building.

"Although there is a security guard provided in the residential building, strangers are still able to access the residential area by registering their details at the guard house", said Respondent A. The criminal might pretend to be a visitor and sneak into the residential area to commit a crime. While Respondent D stated that the security features are not included in the initial design, and this will be difficult to redesign the element of security features like walls and boom gates. The limited spaces of the residential area will be a challenge in providing security features in existing low-cost houses.

In addition, financial issue is the most crucial issue. Therefore, respondents have given some opinions to overcome the issue. Most of the respondents hope that the term and conditions of loan applications can be loosened to increase the opportunity of getting the loan. Besides, the transparency of the application system could be increased and simplify the procedure for applying for low-cost houses. Therefore, they hope that the property developer and government could provide options for low-cost houses where the surrounding has plenty of job opportunities. There will be future development around the low-cost houses that can improve the living condition. The respondents mentioned that B40 house buyers have no choice but to accept the given unit, where the unit might not be their preferred location. The respondents also suggest that the rent and buy option reduces the financial burden of the B40 group.

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IV. CONCLUSION

This paper intends to study the security criteria preferences in low-cost housing. From this study, it is significant that security criteria are needed to reduce the crime rate. Hence, the outcome of this research can inspire the construction industry firms in Malaysia to provide security features in low-cost housing by referring to the security criteria studied in this study since this study has identified several security criteria that are needed for low-cost housing. It is a good beginning point for the community to be concerned about the security issue in low-cost housing and considers the criteria explored in this study. In conclusion, residential crimes are an issue that all Malaysian citizens face; thus, the related parties should pay attention to security issues and increase the implementation and adoption of security criteria in Malaysia's low-cost housing.

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