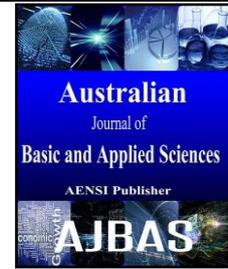




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### The Relationship between Protection and Safety Aspects, and Requirements of Green Homes in Malaysia

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#### ABSTRACT

Green homes consist of protection and safety approach. These element form the requirements of green homes among house buyers in Malaysia. This study attempted to examine the relationship between protection and safety aspects and the house buyers' requirements of green homes in Malaysia. Hypotheses have been used to understand the relationships between protection and safety aspects and house buyers' requirements of green homes. A survey by means of self-administered questionnaires has been employed to collect the data. The research sample is house buyers attending property fairs in six states and one federal territory in Malaysia namely, Kedah, Penang, Kelantan, Melaka, Johor, Sabah and Kuala Lumpur. The respondents have been selected with the convenience sample technique. Out of 2600 questionnaires distributed, 1642 answered questionnaires have been returned, a response rate of 63 per cent. The result suggests that there are positive associations between the implementation of protection and safety factors and house buyers' requirements of green homes among house buyers in Malaysia. Based on research findings, the results seem to prove that the higher the levels of implementation of the green home principles, the better house buyers' requirements of green homes among house buyers in Malaysia. For future studies, it is recommended more studies involving the other stakeholders in the industry should be done. These are the housing developers, authorities, suppliers and contractors. Comparison of these industry contributors may provide a better understanding of how green homes practices can enhance house buyers' requirements of green homes in Malaysia.

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#### INTRODUCTION

Nowadays developers in Malaysia prefer to produce housing using green home concepts even though they do not really know much about the concepts. The green home concept is part of a sustainable development; the concept focuses more on saving costs, preserving natural resources, saving energy and providing comfort.

Green homes is the main agenda in producing houses that both can meet environmental requirements and create a comfortable zone for occupants. Green homes are produced because of the awareness to live in comfortable zones and conserve the environments.

(Thormark, C., 2002) points out that the most important aim in the construction industry is building houses or buildings in general that are environmentally friendly. This suggests that Malaysian housing developers should apply the sustainability concept to guarantee a harmonious life

for everyone in the country. This study attempted to examine the relationship between protection and safety aspects and the house buyers' requirements of green homes in Malaysia.

##### Design for Safety:

Many types of crime prevention procedures have been done to make sure the housing is always a safe area. Natural surveillance has been practised in Crime Prevention through Environmental Design (CPTED), Secured by Design (SBD) and Defensible Space (DS). (Cozens, P.M., 2002) defines natural surveillance as a crucial dimension since criminals do not generally wish to be observed and apprehended. The configuration of physical features, activities and people, in ways that maximise opportunities for surveillance can act to discourage crime. (Desyllas, J., *et al.*, 2003) also define natural surveillance as the overlooking of public spaces by members of the public in the course of their day-to-day lives.

Natural surveillance is very important in our housing scheme. (Cozens, P.M., 2002) demonstrates that in the United Kingdom, Secured by Design (SBD) is an initiative developed in 1989 by the Association of Chief Police Officers (ACPO) and supported by the Home Office Crime Prevention Unit whereby new-build housing developments utilise 'defensible space' and CPTED ideas to reduce opportunities for criminality.

CPTED strategies are built in a way that can make the surroundings safe during the day and the public know what is happening in their housing areas. (Crowe, T., 2000) notes that these elements are important to improve a space design and management:

- Natural access control which is the natural indication of where people are allowed and are not allowed. Do not just depend just on locks and guards, but make security part of the layout.

- Natural surveillance which indicates traditional factors like good lighting is important but do not overlook a natural factor such as a strategically placed window or the placement of employee work stations.

- Territorial reinforcement- This is an umbrella concept which embodies all natural surveillance and accesses control principles. It emphasizes on the enhancement of ownership and proprietary behaviours.

Natural surveillance by (Crowe, T., 2000) also states what need to be followed to make sure the housing area and house are consistently safe. These are what need to be followed:

- Provide magnet for watches, or gatekeepers by increasing the use of outdoor space (e.g., porches, yard assignment, and gardening).

- Reduce light pollution on bedroom windows by influencing the residents to leave curtains and blind open or partially open to create the reality and perception of surveillance.

- Install windows in dead walls on the sides of buildings.

- Install automatically controlled porch lights to create a sea of light at the human scale to allow for better visual identification of faces, and intensity of overhead mast-mounted lights.

- Place car parking in line-of-sight of units, or preferably, immediately in front.

- Install central HVAC to eliminate the use of window units that block natural surveillance and audio monitoring of outdoor activities; this also significantly improves the quality of life.

- Remove walls and hedgerows that produce impediments to natural surveillance; replace dumpster enclosures and perimeter fencing with transparent materials.

The type Agent of surveillance, Object of surveillance, and Mechanism of surveillance by (Desyllas, J., *et al.*, 2003):

- Public space users and building occupants see public properties and other spaces from windows and building entrances.

- Public space users could see each other passing through local properties and provide a 'virtual' community which helps them see access points to buildings.

#### **Protection and Safety:**

(Gomez-Munoz, V.M., and M.A. Porta-Gandara, 2003) highlights an important issue in energy saving constructions which is the use of solar passive techniques that allow the reduction of the thermal gains and electrical loads of air-conditioned systems. These techniques are used worldwide to offer economic alternatives in improving comfort. These techniques use awnings and external walls – such as those used to fence the property limits – that work together to diminish the thermal loads from solar beam radiation, particularly at eastern and western orientations. The results for the new method presented herein are convincing enough to produce optimal performance of solar control in houses located in any places with hot and dry climates, by means of interacting shading devices, like the external wall and the awning. This approach is directed to hot and dry weather conditions when total shading through the fenestration is required.

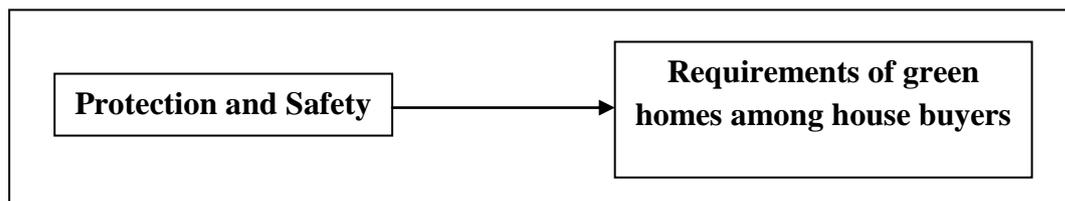
(Papadakis, N., *et al.*, 2007) underlined that the water demand is continuously increasing mainly due to population growth and raising needs in agriculture, industrial uses and domestic services. Integrated water management has a strong impact on long-term protection and sustainability. According to (Papadakis, N., *et al.*, 2007), the intermission in water supply is related either to limited reserves or technical problems. During intermissions, external impure substances can penetrate into the water. This can put a consumer's life at risk by causing serious health problems to him or her. The possibilities for the water quality to decrease during these periods are relatively high. In fact, interrupted water delivery is very important. The opposite, as mentioned above, can be very dangerous because several contaminating and polluting microorganisms developed in stagnant water in pipes can transferred to the consumers. These microorganisms are more likely to be pathogenic.

(Sufian, A., and R.A. Rahman, 2008) in the context of Malaysian construction industry, the recognition of materials to be quality materials is depending on whether it is certified by SIRIM Berhad. SIRIM Berhad is a government-owned company under the Ministry of Finance appointed by the Department of Standard Malaysia to develop a Malaysian Standard (MS). SIRIM is responsible for developing standards for critical products, systems and services. The approval of a standard as MS is governed by the Standards Malaysia.

(Paul, W.L., and P.A. Taylor, 2008) assert that for green buildings to be more comfortable and satisfying than conventional building, there must be some features that are unique, or at least more common, to their designs that could contribute to a better indoor environmental quality. The use of low-toxicity finishes and furnishings which could result in better air quality is also encouraged. (Omer, A.M., 2008), says that if green buildings employ low-toxicity finishes and furnishings, their air qualities will be perceived as better than those of conventional buildings.

### **Hyphotesis:**

The literature reviews show clearly that there is a relationship between protection and safety aspects and the requirements of green homes among house buyers. It plays an important role when housing designs and zones are developed. Figure 1 illustrates the relationship between protection and safety aspect and the requirements of green homes among house buyers. The protection and safety aspect has three dimensions; 1) design, 2) material and 3) product.



**Fig. 1:** Conceptual Relationship between Protection and Safety, and Requirements of Green Homes among House Buyers

The conceptual relationship between protection and safety aspect and the requirements of green homes among house buyers in Malaysia is hypothesized as the following:

**H<sub>A</sub>** : There is a positive relationship between protection and safety, and requirements of green homes among house buyers.

### **Methodology:**

This study involves collecting data on the perceptions of potential house buyers using a set of questionnaires given in a natural non-contrived setting without controlling and manipulating the variables. Distributing surveys that contain questionnaires is a common technique used in research to gather data quickly from large groups of people (Al-Temeemi, A. and D. Harris, 2004) and (Zikmund, W.G., 2000). The surveys are distributed to test the hypothesis that predicts the relationship between protection and safety aspects and house buyers' requirements in Malaysia.

This study gathers data in subsequent analyses. The unit of analyses for this study is 'individual' and every unit represents a potential house buyer in Malaysia. Therefore, a group of individuals who attended a particular property exhibition have been

assigned by the representative of this study as respondents. This study is considered cross-sectional. The data for the study have been collected through questionnaires from July 2008 to March 2009. Out of 2600 questionnaires distributed, 1642 answered questionnaires have been returned, a response rate of 63 per cent.

### **RESULTS AND DISCUSSION**

This section shows the results of the test to examine the relationships between protection and safety aspects and requirements of green homes among house buyers in Malaysia. To determine the association of the independent and dependent variables, hypothesis and Pearson Product Moment Correlation Coefficient tests are carried out. Table 2 shows the Pearson (*r*) correlation coefficient among the independent variables of the study.

All variables have been analyzed with a correlation analysis which both explores and interprets the relationships between independents and dependents variables. Table 1 shows the guidelines of correlation coefficient (*r*) suggested by (Rowntree, D., 1981) for this study:

**Table 1:** The Guidelines of Correlation Coefficient

Scale	Negative, very weak	Weak, low	Moderate	High marked, strong	Very high, very strong
Percent	0.0 to 0.2	0.2 to 0.4	0.4	0.7 to 0.9	0.9 to 1.0

Source: (Rowntree, D., 1981)

This section is allocated to test the relationship between the protection and safety aspects and the requirements of green homes among house buyers in

Malaysia. The hypothesis for this section is as the following:

**$H_A 2(5)$ :**

*There is a positive relationship between the implementation of the protection and safety aspects and the requirements of green homes among the house buyers*

The Pearson product-moment linear correlation test has been used to determine the relationship between the protection and safety aspects and the requirement of green homes among house buyers. The result demonstrates that there is a significant relationship between the protection and safety aspects and requirement of green homes among house buyers in Malaysia with  $r = 0.601$  at  $p < 0.01$ . The result suggests that house buyers are highly

interested to implement the protection and safety aspects to meet the requirements of green homes.

Table 2 presents the summary of the test results on the relationships between protection and safety aspects and the requirements of green homes among house buyers. These results propose that there will be higher levels of implementation of green homes aspects in building houses. The results also indicate that there is an increase in the preferable perceptions of requirements of green homes among house buyers. The results propose that the implementation of the protection and safety aspects in building houses need to be done so that the houses that meet the green home requirements of the house buyers would be more available.

**Table 2:** Summary of Test Results – Relationship between the Implementation of Green Homes Aspects and Requirements of Green Homes

Alternative Hypothesis	r	p	Results
$H_A 2(5)$ : <i>There is a positive relationship between the implementation of protection and safety aspects and the requirements of green homes among the house buyers</i>	0.601	$P < 0.01$	Significant

**Conclusion:**

The objective of this study is to measure the relationship between protection and safety aspects and the house buyers' requirements of green homes. After evaluating the results, there are positive associations found between the implementation of protection and safety aspects and house buyers' requirements of green homes in Malaysia. It shows that house buyers in Malaysia believe that the implementation of green home factors can lead to better housing developments.

The findings in this study, suggest that the protection and safety approach can describe and predict the house buyers requirements of green homes in Malaysia. This finding proved that the hypothesis of positive relationship between independent variables and dependent variable.

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